



**FINAL
SITE INSPECTION PRIORITIZATION REPORT
SPECTRUM FINISHING CORPORATION
BABYLON, SUFFOLK COUNTY, NEW YORK**

CERCLIS I.D. No.: NYD044466910

OCTOBER 1998

Volume 1 of 3

Prepared for:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Prepared by:

**ROY F. WESTON, INC.
Raritan Plaza III, Suite 2B
101 Fieldcrest Avenue
Edison, New Jersey 08837**

W.O. No.: 04200-022-081-0132

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GENERAL DESCRIPTION AND SITE HISTORY

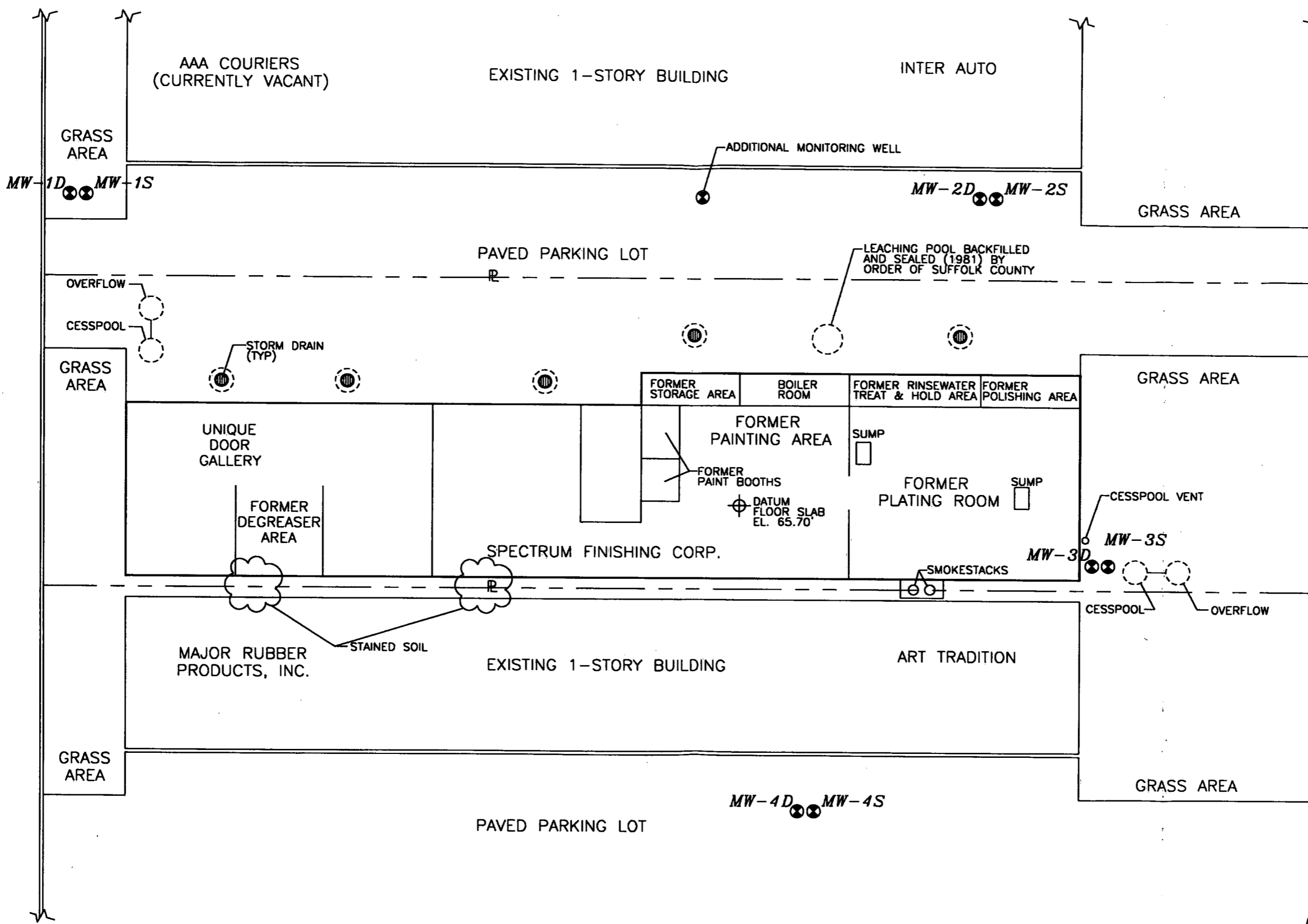
The Spectrum Finishing Corporation (SFC) site [Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) ID No. NYD044466910], is an inactive electroplating facility located at 50 Dale Street, in West Babylon, Suffolk County, New York. CERCLIS indicates NTU Circuits, Inc. is an alias for SFC (Ref. Nos. 1, pp. 1-1; 28). SFC operated at the site from 1968 until 1993 when SFC reportedly filed for bankruptcy (Ref. Nos. 4; 20; 25; 28). SFC was owned by William DiChirico and Joseph Vazzana. The site is currently owned by Mr. Vazzana (Ref. Nos. 6; 14; 27). The SFC site is located in suburban Long Island, where the surrounding land is used predominantly for commercial and manufacturing operations (Ref. No. 1). The site is approximately 0.5 acres in size (Ref. No. 14). It is bounded to the east by Dale Street, to the west by Cabot Street, and to the north and south by commercial and manufacturing properties (Ref. Nos. 3; 4, p. 1). Figures 1 and 2 provide a Site Location Map and a Site Map, respectively.

According to Suffolk County property records, William DiChirico and Joseph Vazzana were co-owners of the SFC property prior to the fall of 1993. In August 1993, the property records show the William DiChirico sold his portion of the SFC property to Mr. Vazzana (Ref. No. 27). The site has been inactive since 1993 (Ref. Nos. 26; 28). A door manufacturer is currently using the former office area; a total of five employees work on-site for the door manufacturer (Ref. Nos. 30; 34, p. 21).

SFC received a one-year permit to operate a waste treatment system from the Suffolk County Department of Health (SCDOH) on 27 June 1968 (Ref. No. 6). Manufacturing operations included copper, cadmium, and nickel electroplating; chromium conversion coating; and descaling of titanium alloys (Ref. Nos. 4, p. 4; 14). The chemicals used on-site or known to be present in process wastes included caustic soda, sulfuric acid, sodium dichromate, nitric acid, hydrochloric acid, sodium chromate, potassium chromate, sodium fluoride, potassium fluoride, sodium nitrate, potassium nitrate, sodium cyanide, cadmium oxide, sodium carbonate, nickel sulfamate, boric acid, copper cyanide, potassium hydroxide, chromic acid, cyanide, chlorine, sodium metabisulfide, copper, cadmium, chromium, nickel, zinc, toluene, methylethylketone (also known as 2-butanone), manganese phosphate, iron, manganese, beryllium, magnesium, tin, calcium cyanide, trichloroethylene (also known as trichloroethene) and other unspecified solvents (Ref. Nos. 4, pp. 8, 10, 13, 14 18; 14; 51). The SFC electroplating operations consisted of a 700-square-foot building that housed the electroplating operations, the treatment facility, the offices, and a drum storage facility (Ref. No. 1, p. 1-1). Numerous storage tanks and vats were located inside the building, which contained two sumps with concrete bottoms, one approximately 4 feet by 4 feet by 5 feet deep and the other approximately 4 feet by 5 feet by 5 feet deep (Ref. Nos. 36, 38). Outside the building, storm drains in the parking lot located north of the building flowed into concrete "dry wells" that drained directly to the ground (Ref. No. 42). Aboveground storage tanks and a drum storage area were also located outside the building while the facility was operational, but their locations could not be determined from available site files (Ref. No. 20).

CABOT STREET

DALE STREET



LEGEND

- ⊗ GROUND WATER MONITORING WELL
MW-4S MONITORING WELL NUMBER

SCALE: NONE



PROJECT NAME: SPECTRUM FINISHING CORP.
50 DALE STREET
WEST BABYLON, NY

CLIENT NAME: U.S. EPA

SITE MAP

DATE: 10/07/98

FIGURE #: 2

For the purpose of this assessment, four waste sources have been identified at the site: the outside drum storage area, the storm drain "dry wells," areas of stained soil on the south side of the building, and the building itself along with contaminated soil detected underneath the concrete floor of the building. The number of drums that were stored outside, and their contents, are not known. For the purpose of this assessment, it is assumed that the drums contained the wastes generated at the site, and at least one drum (50 gallons) was present. Five storm drain "dry wells" are present north of the Spectrum building; each "dry well" has a volume of approximately 380 cubic feet (Ref. No. 42). Although the storm drains were not full of water during a recent sampling event, their entire volume will be used for this assessment (Ref. No. 34, p. 21). Three areas of contaminated soil were documented along the south and west sides of the building during a recent sampling event; a default area of one square foot will be assumed for each of these areas, for a total of three square feet (Ref. No. 34, p. 11; 41, pp. 3-124, 125-130, 157-160, 163-171, 208-213, 217-219, 232, 233, 393-436, 437-439, 457-462, 470-471). The building contained numerous trenches, sumps, tanks, and vats; each containing various chemicals. During a U.S. EPA removal action conducted in 1997-1998, a total of 25,767 gallons and 77 cubic yards of various hazardous wastes were removed from the building (see Table 6). In addition, one container (volume not specified) of radioactive material was removed from the building. Contamination was detected during a recent sampling event in two separate areas in soil underneath the concrete floor of the building. One area, underneath the former paint booths, has an approximate area of 12 square feet (the approximate distance between two sample locations multiplied by an assumed one-foot width); the other, underneath the former plating room, has an approximate area of 400 square feet (approximately 20 feet by 20 feet) (Ref. No. 34, p. 21; 41, pp. 3-124, 131-134, 145-160, 172-177, 193-213, 220-221, 227-233).

The Suffolk County Department of Health Services (SCDHS) conducted several site inspections between 1970 and 1975. The following violations were noted during the SCDHS inspections (Ref. No. 1, p. 3-1):

- SFC was discharging industrial wastewater into stormwater drains (Ref. No. 2, pp. 17, 18).
- A collection sump inside plant was overflowing out of plant into storm drains (Ref. No. 2, p. 18). Water emanating from somewhere in the plant was flowing towards the western storm drain. A green puddle was observed around the western storm drain.

Samples were also collected by SCDHS from the leaching tanks, the storm drains, and the site runoff. Elevated concentrations of heavy metals (iron, copper, cadmium, nickel, and chromium) were detected in the samples collected by the SCDHS (Ref. No. 2, p. 4). Copies of laboratory reports for these data were not available for review. In 1975, the NYSDEC issued an Order on Consent to SFC to "abate discharge of waste matter into the waters of the State." The order stated that all outside tanks had to be sealed to prevent any further leakage by 1 May 1975 (Ref. No. 7). It is not known if this consent order was signed by SFC. The NYSDEC also issued a State Pollutant Discharge Elimination System (SPDES) Discharge Permit to SFC on 8 August 1975, which permitted only discharge of sanitary waste. The permit, which was effective through 8 August

1980, prohibited discharge from industrial waste holding tanks to surface or groundwater (Ref. No. 54).

On 16 December 1981 the SCDHS and SFC entered into another Order on Consent. The order stated the following terms and conditions (Ref. No. 8):

- SFC agreed not to discharge any of its industrial waste on the ground, groundwaters, surface waters, or subsurface leaching facilities without first obtaining a SPDES permit for such a discharge.
- SFC agreed to move all toxic or hazardous materials to a suitable location inside the SFC building for storage.
- SFC agreed to have a licensed industrial waste scavenger empty the liquid and solid contents of the "cadmium-contaminated storm drain" located approximately 10 feet from the SCF garage door.

SCDHS issued a notice of formal hearing sometime between March 1982 and May 1982. This notice stated the following (Ref. No. 9):

- SCF discharged toxic or hazardous materials on 2 March 1982, 2 February 1982, and 27 January 1982 (without a SPDES permit).
- SFC did not complete construction of a storage facility for toxic or hazardous materials by 3 March 1982, as required in the 1981 Consent Order.
- SCF did not move all storage of its toxic or hazardous materials indoors.
- SCF was discharging in excess of New York State Discharge Standards.

On 11 May 1982, following the notice of formal hearing, an administrative hearing was held by the SCDHS (Ref. No. 13). The hearing recommended that SCF abandon the storm drain located approximately 15 feet northwest of the SCF garage door by filling in the storm drain with clean soil to within approximately 6 feet so as to permit the installation of a non-porous, prefabricated, concrete holding tank, which will be piped to a pre-existing storm drain on the SCF property. It was also recommended that SCF install a solid, non-porous storm drain cover over the storm drain to prevent accidental or intentional discharges into the storm drain prior to its abandonment (Ref. No. 21, pp. 24-26).

In 1983, SFC reportedly stopped discharging wastewater to groundwater, in accordance with its former SPDES permit, by sealing the storm drains to prevent any further spills from discharging directly into the groundwater (Ref. No. 2, p. 4). SFC reportedly began storing all of its plating rinse water and using a licensed hauler to transport it to an approved treatment, storage, and disposal (TSD) facility (Ref. No. 2, p. 4).

SCDHS collected numerous samples from a storm drain, a sanitary pool, and a stainless steel tank on the north side of the Spectrum building in 1983 and 1984. The following substances were detected in the storm drain opposite the paint storage room at concentrations in excess of SFC's SPDES permit: hexavalent chromium (1.2 milligrams per liter (mg/L) and copper (0.4 mg/L). The following substances were detected in the sanitary pool on the north side of the building at concentrations in excess of SFC's SPDES permit: toluene (93 parts per billion (ppb)), 2-butanone (500 ppb), copper (0.18 mg/L), chromium (1.2 mg/L), and nickel (0.2 mg/L). Substances detected in an open-top, stainless steel tank outside of the building included the following: copper (1,200 mg/L), chromium (100 mg/L), nickel (50 mg/L), zinc (26 mg/L), lead (1.2 mg/L), and cadmium (8,000 mg/L) (Ref. No. 55, pp. 2, 3, 5, 6, 8, 11).

On 21 February 1984, a SCDHS inspector observed a "constant drip" from the stainless steel tank resulting in a puddle of liquid; he collected samples from the puddle, the stainless steel tank, and a nearby storm drain. Concentrations of copper, chromium, nickel, and cadmium were higher in the puddle than in the stainless steel tank. These metals were also detected in the storm drain, albeit at lower concentrations. The inspector issued a notice of violation to SFC (Ref. No. 55, pp. 14-16, 18, 19).

Additional violations, including leaks of toxic substances from the building onto the ground and a puddle of amber liquid in the parking lot, were noted during a SCDHS inspection on 12 December 1984 (Ref. No. 56).

In June 1985, SFC reportedly constructed an indoor storage facility (containment system) for its hazardous/toxic substances, waste, and process solutions, in accordance with the Suffolk County Sanitary Code, Article 12-Construction of an Indoor-Outdoor Storage Facility for Hazardous/Toxic Materials (Ref. No. 2, p. 6). SFC submitted plans to construct a secondary containment system for its plating solutions, rinse water, wastes, and hazardous substances. SCDHS approved construction of the containment system (after a review of the engineering drawings) and the chemical resistance coating system that was to be applied to the floors and walls (Ref. No. 57). The reinforced-concrete secondary containment system was reportedly constructed. The containment system reportedly provided a capacity of 110 percent of the total tank volumes (Ref. No. 2, p. 6).

NYSDEC and SFC entered into a third Order on Consent on 10 December 1985. Under this order, SFC admitted having "negligently disposed of industrial and hazardous wastes at the site" and agreed to pay a civil penalty of \$10,000 in settlement of certain claims by NYSDEC against Spectrum (Ref. No. 58).

SCDHS filed a Complaint Field Report in April 1988 after a caller reported that a drum of 1,1,1-trichloroethane was punctured by a forklift and the resulting spill was diverted to a nearby storm drain or floor drain. A subsequent inspection showed that no floor drains appeared to have been affected by the spill. It is not known whether any storm drains were affected (Ref. No. 59).

Woodward-Clyde Consultants, Inc. (WCC) completed a Phase I investigation of the SFC site (NYSDEC Site No. 152029). A final report from this investigation was completed on 20 September 1984 for the NYSDEC/Division of Solid Waste (Ref. No. 1). As part of the Phase I

Report, a work plan was submitted to conduct a Phase II investigation. The objective of the proposed work plan was to collect essential field information to adequately assess the site and provide recommendations for remedial action (Ref. No. 1, pp. 6-1 through 6-4).

GRB Environmental Services, Inc. (GRB) and Richard D. Galli, P.C. performed a Phase II investigation of the site on behalf of SFC from January to November 1987. The investigation included a geophysical survey, groundwater monitoring well installations, and soil and groundwater sample collection (Ref. No. 2, pp. 1-3). According to the NYSDEC, a Phase II draft report was completed; however, this report was not finalized because SFC subsequently filed for bankruptcy (Ref. No. 5).

During January 1987, eight monitoring wells were installed as part of the Phase II investigation (Ref. Nos. 2, p. 1; 12). The objectives of the monitoring wells as addressed in the Phase I workplan was to establish groundwater quality, local stratigraphy, and groundwater flow direction in the upper water-bearing unit at the site (Ref. No. 1, pp. 6-1 through 6-3). Four shallow monitoring wells were installed to depths ranging from 24.1 to 25 feet below ground surface (bgs) and four deep monitoring wells were installed at depths ranging from 49.3 to 50 feet bgs (Ref. No. 12).

A total of ten soil samples were collected from the monitoring well boreholes during the Phase II investigation (Ref. Nos. 2, pp. 1, 2, 7, 9, 14; 12). According to the Phase II Report, MW-1-SS was designated as the background soil sample (Ref. No. 2, p. 9). Background soil samples were collected from sampling location MW1-SS at three discrete sampling intervals (0 to 2; 20 to 22; and 50 to 52 feet bgs) (Ref. Nos. 2, pp. 9, 14; 12). All soil samples were analyzed for cadmium, chromium, copper, iron, lead, nickel, zinc, cyanide, chlorides, 1,1-dichloroethane, 1,1,1-trichloroethane, 2-butanone, trichloroethene, trans-1,2-dichloroethane, and toluene (Ref. No. 2, p. 9). Soil samples were analyzed by New York Testing Laboratories using U.S. EPA methods and guidelines in accordance with the Contract Laboratory Program (CLP) protocols and deliverables (Ref. No. 2, p. 2).

Two surface soil samples-MW1-SS-1 (background sample) and MW3-SS-1-were collected from 0 to 2 feet bgs (Ref. Nos. 2, pp. 9, 14; 12). Table 1 presents selected analytical results for the surface soil samples collected during the Phase II investigation. Volatile organic compounds (VOCs) were not detected in the surface soil samples (Ref. Nos. 2, p. 14; 22). No hazardous substances were detected in MW3-SS-1 at concentrations greater than three times the background sample concentrations. Cyanide was not detected in either of the two surface soil samples (Ref. Nos. 2, p.14; 22).

TABLE 1

**SELECTED SOIL SAMPLING ANALYTICAL RESULTS
FOR PHASE II INVESTIGATION
SURFACE SOIL SAMPLES (0 TO 2 FEET BGS)
(ALL CONCENTRATIONS IN MG/KG)**

Analyte/Compound	MW3-SS-1	MW1-SS-1 (Background)
Cadmium	2.0	1.27
Chromium	17.5	9.04
Copper	10.5	5.73
Iron	6,356	6,591
Lead	11.5	27.4
Nickel	5.25	3.95
Zinc	32.5	36.1
Chloride	18	73

Notes:

mg/kg - milligrams per kilogram

Four subsurface soil samples-MW1-SS-5 (background sample), MW2-SS-5, MW3-SS-5, and MW4-SS-5-were collected from 20 to 22 feet bgs (Ref. Nos. 2, pp. 9, 14; 12). Table 2 presents selected subsurface soil sampling results for samples collected from 20 to 22 feet bgs during the Phase II investigation. VOCs and cyanide were not detected in these subsurface soil samples (Ref. Nos. 2, p. 14; 22). Copper and lead were detected in MW2-SS-5 at concentrations greater than three times the background concentration or greater than the detection limit if the analyte was not detected in the background sample. Chromium was detected in MW3-SS-5 at a concentration greater than three times the background concentration. Copper and nickel were detected in MW4-SS-5 at concentrations greater than three times the background concentration or greater than the detection limit if the analyte was not detected in the background sample.

Four subsurface soil samples--MW1-SS-11 (background sample), MW2-SS-11, MW3-SS-11, and MW4-SS-11-were collected from 50 to 52 feet bgs (Ref. Nos. 2, pp. 9, 14; 12). Table 3 presents selected analytical results for subsurface soil samples collected from 50 to 52 feet bgs during the Phase II investigation (Ref. Nos. 2, pp. 9, 14; 22). VOCs and cyanide were not detected in these subsurface soil samples (Ref. No. 2, p. 14). Cadmium, copper, and zinc were detected in at least one sample at concentrations greater than three times the background concentration or greater than the detection limit if the analyte was not detected in the background sample. (Ref. Nos. 2, pp. 9, 14; 22).

TABLE 2

**SELECTED SOIL SAMPLING ANALYTICAL RESULTS
FOR PHASE II INVESTIGATION
SUBSURFACE SOIL (20 TO 22 FEET BGS)
(ALL CONCENTRATIONS IN MG/KG)**

Analyte/Compound	MW2-SS-5	MW3-SS-5	MW4-SS-5	MW1-SS-5 (Background)
Cadmium	ND	0.915	1.36	<3
Chromium	4.67	29.8	3.63	3.71
Copper	30	2.74	8.28	1.31
Iron	1,155	1,986	1,428	2,220
Lead	12.2	ND	ND	<0.001
Nickel	ND	ND	4.08	<0.015
Zinc	5.53	7.32	6.69	7.53
Chloride	19	15	26	14

Notes:

mg/kg - milligrams per kilogram

ND = nondetect

TABLE 3

**SELECTED SOIL SAMPLING ANALYTICAL RESULTS
FOR PHASE II INVESTIGATION
SUBSURFACE SOIL (48 TO 52 FEET BGS)
(ALL CONCENTRATIONS IN MG/KG)**

Analyte/Compound	MW2-SS-11	MW3-SS-11	MW4-SS-11	MW1-SS-11 (Background)
Cadmium	ND	ND	0.811	<0.003
Chromium	3.56	4.38	6.14	2.98
Copper	1.58	ND	12	<0.010
Iron	1,854	1,612	2,890	1,670
Lead	ND	ND	ND	<0.001
Nickel	ND	ND	ND	<0.015
Zinc	6.09	6.63	17.4	5.22
Chlorides	11	15	28	15

Notes:

mg/kg - milligrams per kilogram

ND - Not detected

Eight groundwater samples (two upgradient and six downgradient) were collected during the Phase II investigation (Ref. No. 2, pp. 1, 2, 10, 16). Groundwater samples were collected from four on-site shallow monitoring wells (MW1-S [upgradient], MW2-S, MW3-S, and MW4-S) and four on-site deep monitoring wells (MW1-D [upgradient], MW2-D, MW3-D, and MW4-D) (Ref. No. 2, pp. 10, 15, 16). All groundwater samples were analyzed for 1,1-dichloroethane, 1,1,1-trichloroethane, trichloroethene, 1,2-dichloroethane, 2-butanone, toluene, cadmium, chromium, copper, iron, lead, nickel, zinc, cyanide, and chlorides (Ref. No. 2, p. 10). Groundwater samples were analyzed by New York Testing Laboratories using U.S. EPA methods and guidelines in accordance with CLP protocols and deliverables (Ref. No. 2, p. 2). Tables 4 and 5 present the Phase II analytical results for shallow and deep groundwater samples.

Several metals, VOCs, and chlorides were detected in the upgradient and downgradient shallow groundwater samples (Refs. Nos. 2, pp. 10, 15, 16; 22; 23). 1,1,1-Trichloroethane, trichloroethene, toluene, chromium, copper, iron, zinc, and chlorides were detected in the upgradient shallow groundwater sample MW1-S. Copper, iron, and nickel were detected in groundwater sample MW2-S at concentrations greater than three times the background concentration or greater than the detection limit if the analyte was not detected in the background sample. Cadmium, chromium, and copper were detected in groundwater sample MW3-S at concentrations greater than three times the background concentration or greater than the detection limit if the analyte was not detected in the background sample. Cadmium and copper were detected in MW4-S at concentrations greater than three times the background concentration or greater than the detection limit if the analyte was not detected in the background sample. Other hazardous substances in groundwater samples MW2-S, MW3-S, and MW-4S were detected at concentrations less than three times the background concentrations (Ref. Nos. 2, p. 16; 22; 23). The Phase II Report indicates the holding times for VOCs were exceeded (Ref. No. 2, p. 2).

TABLE 4

**GROUNDWATER SAMPLING ANALYTICAL RESULTS
FOR PHASE II INVESTIGATION
SHALLOW MONITORING WELLS
(ALL CONCENTRATIONS IN μ G/L UNLESS OTHERWISE NOTED)**

Analyte/Compound	MW2-S	MW3-S	MW4-S	MW1-S (Background)
1,1-Dichloroethane	ND	ND	ND	<5
1,2-Dichloroethane	ND	ND	ND	<5
2-Butanone	ND	ND	ND	<10
1,1,1-Trichloroethane	22	10	14	26
Trichloroethene	35	6	5.0	17
Toluene	5	2.0 J	3.0 J	5
Cadmium	3	11	99	<3
Chromium	14	36	30	11
Copper	926	139	147	19
Iron	95	ND	ND	23
Lead	ND	ND	ND	<1
Nickel	28	ND	ND	<15
Zinc	67	87	62	196
Chlorides (mg/L)	11	11	11	32

Notes:

ug/L - micrograms per liter

mg/L - milligrams per liter

ND = Not detected

J = Estimated value

TABLE 5

**GROUNDWATER SAMPLING ANALYTICAL RESULTS
FOR PHASE II INVESTIGATION
DEEP MONITORING WELLS
(ALL CONCENTRATIONS IN $\mu\text{G/L}$ UNLESS OTHERWISE NOTED)**

Analyte/Compound	MW2-D	MW3-D	MW4-D	MW1-D (Background)
1,1-Dichloroethane	ND	ND	ND	<5
1,2-Dichloroethane	ND	ND	ND	<5
2-Butanone	ND	ND	ND	<10
1,1,1-Trichloroethane	12	21	28	5
Trichloroethene	5	24	73	2.0 J
Toluene	5	4	4.0 J	4.0 J
Cadmium	45	16	6	<3
Chromium	10	14	26	10
Copper	41	56	83	15
Iron	39	33	ND	34
Lead	29	40	ND	<1
Nickel	ND	ND	ND	<15
Zinc	109	339	59	40
Chlorides	19	24	19	21

Notes:

ug/L - micrograms per liter

mg/L - milligrams per liter

ND = Not detected

J = Estimated value

Several VOCs, metals, and chlorides were detected in the upgradient and downgradient deep groundwater samples (Ref. No. 2, pp. 15, 16; 22; 23). Chromium, copper, iron, zinc, and chlorides were detected in the upgradient deep groundwater sample MW1-D. 1,1,1-Trichloroethane, trichloroethene, and toluene were also detected in the upgradient deep groundwater sample. Cadmium and lead were detected in groundwater sample MW2-D but not in the background sample. 1,1,1-Trichloroethane, trichloroethene, cadmium, copper, lead, and zinc were detected in groundwater sample MW3-D at concentrations greater than three times the background concentration or greater than the detection limit if the hazardous substances were not detected in the background sample. 1,1,1-Trichloroethane, trichloroethene, cadmium, and copper were detected in groundwater sample MW4-D at concentrations greater than three times the background concentration or greater than the detection limit if the hazardous substance was not detected in the background sample (Ref. Nos. 2, pp. 15, 16; 22; 23).

Although the Phase II analytical data indicate a release of hazardous substances to groundwater, the data would be rejected or qualified as unusable if it were validated using Region 2 Contract Laboratory Program (CLP) methods (Ref. No. 35).

The NYSDEC and a U.S. EPA on-scene coordinator (OSC) inspected the site in the spring of 1997 at the request of the SCDHS, to determine if an emergency response removal action was necessary. There were numerous drums, open vats of dyes and electroplating liquids, bulk storage tanks, and gaylord boxes of sludge still stored inside the facility. It was noted during the visit that the indoor sumps and trenches were filled and that liquid was pooled in areas on the cement floor. No material was observed flowing out of the facility. Several of the vats were sampled for hazard characterization (HAZCAT). No materials were stored outside of the building. The NYSDEC and U.S. EPA met with the owner during the site visit. According to the U.S. EPA OSC, the owner was trying to get all of the liquids out of the vats, boxes, and tanks into drums for disposal. However, the owner could not fund the disposal (Ref. Nos. 28-30).

U.S. EPA obtained funding for a CERCLA removal action in August 1997. In October 1997, the site owner granted access to U.S. EPA to perform a removal action at the site. The U.S. EPA conducted a walkthrough with the emergency response contractor on 31 October 1997. Site activities commenced the week of 3 November 1997. U.S. EPA mobilized the emergency response contractor, Earth Tech Remediation Services, and Roy F. Weston, Inc. (WESTON) Superfund Technical Assessment and Response Team (START). Command post trailers and utilities were set up, and 24-hour security was implemented. U.S. EPA met with the site owner on 6 November 1997 and obtained approval to dispose of the debris to clear room to work in the building. Two 20-cubic yard roll-off containers of debris were shipped off-site. Forty-five vats and 25 boxes containing electroplating chemicals were sampled and field screened. Seven partial vats were blended together following compatibility testing. Nine composite samples of the bulk waste streams were collected and shipped to an off-site lab for disposal analysis (Ref. No. 36).

Removal activities continued through March 1998. In early December 1997, 425 drums containing waste chemicals were sampled, field screened, and staged on-site. Three containers labeled as containing radioactive thorium-two jars containing liquid and one covered metal pail containing solids were identified on-site. Repackaging of the bulk solids from the existing boxes, which were no longer shippable, into new cubic yard shipping boxes, was initiated. U.S. EPA obtained approval from the site owner to remove a portion of the retention wall around the wastewater treatment system and to cut open the treatment tank to facilitate the removal of approximately 1,500 gallons of cyanide/metal sludge from the system. Approximately 100 gallons of waste were drained from the remaining process equipment. Thirteen unopened 5-gallon pails of flammable rosin flux were returned to the manufacturer for recycling (Ref. Nos. 37; 38; 44; 49).

During the remaining period of removal activities, waste profiles for bulk liquids were sent to selected TSD facilities for approval. High levels of hexavalent chromium were detected in the liquid waste streams. A total of 34 steel and 12 poly vats were decontaminated using a pressure washer. The decontaminated vats, as well as numerous roll-off containers of debris, were removed from the site. Numerous drums were overpacked, and the contents of other containers, including 41 5-gallon pails and one vat, were transferred into drums. A mixer was installed on one tank to slurry the contents for removal via a vacuum truck. Emptied Baker tanks were demobilized and a wooden platform was cut up for disposal. A total of 24 cubic yards of solids were generated from the solidification of vat residues. Bulk waste cyanide liquid and acid liquid, drums, containers of thorium-232, and cubic yard boxes of corrosive solids were shipped off-site for disposal (Ref. Nos. 45; 46; 47; 48).

During the final weeks of the removal period, the floors were scraped and swept to remove the deposits of solids. The interior walls and floors of the boiler room, wastewater treatment room, garage, storage room, and both process rooms including the paint booths were pressure washed. Wipe and chip samples were collected from floor and wall locations throughout the building and sent out for analysis to document the extent of any remaining contamination of the building interior; following review, the data were expected to be forwarded to NYSDEC for further consideration. All equipment and personnel were demobilized from the site on 6 March 1998; site security was discontinued on the same date. The site owner was notified of the demobilization and given keys to the building. NYSDEC representatives were given a site tour on 12 March 1998 and

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updated on the status of the removal action. Following analysis of wastewater, the wastewater was shipped off-site to a disposal facility. Table 6 presents a summary of the wastes removed from the site (Ref. Nos. 49; 50).

TABLE 6**WASTES REMOVED FROM SPECTRUM FINISHING SITE DURING 1997-1998 REMOVAL ACTION**

DATE	MANIFEST	QUANTITY/MATERIAL	DESTINATION
02-03-98	MI 4370081	1 Tank, 3000 Gallons, RQ Hazardous Waste Liquids	Michigan Recovery Systems Inc., Romulus, MI
02-05-98	MI 4370087	1 Tank, 2,067 Gallons, RQ Waste Corrosive Liquids	CyanoKEM, Inc., Detroit, MI
02-17-98	MI 4370105	26 Cubic Yard Boxes, RQ Waste Corrosive Solids	Envotech Mgmt. Services Inc., Belleville, MI
12-17-97	MI 4371321	25 Cubic Yard Boxes, RQ Waste Corrosive Solids	Envotech Mgmt. Services Inc., Belleville, MI
02-18-98	# 64145	1 Container Radioactive Material	Radiac, Brooklyn, New York
02-18-98	MI 4556366	3 Drums, Hazardous Waste Liquid/Waste Corrosive Liquids	City Environmental Inc., Detroit, MI
02-18-98	MI 4556367	71 Drums, RQ Waste Corrosive Liquids/Hazardous Waste Liquids	City Environmental Inc., Detroit, MI
02-18-98	MI 4556369	20 Drums, RQ Waste Corrosive Liquids/Hazardous Waste Liquids	City Environmental Inc., Detroit, MI
02-18-98	MI 4556376	66 Drums, Waste Corrosive Liquids, Hazardous Waste Liquids, Waste Oxidizing Solids, and Waste Potassium Permanganate	City Environmental Inc., Detroit, MI
02-19-98	NJA 2785657	34 Drums, Hazardous Waste Liquid/Solid, Waste Corrosive Solid and Flammable Liquid	Cycle Chem Inc., Elizabeth, NJ
02-19-98	NJA 2785658	21 Drums, RQ Waste Corrosive Liquid, Hazardous Waste Liquid, and Waste Corrosive Solid	Cycle Chem Inc., Elizabeth, NJ
02-19-98	NJA 2785660	73 Drums, Hazardous Waste Liquid n.o.s.	Cycle Chem Inc., Elizabeth, NJ
02-19-98	MI 4556368	63 Drums, Hazardous Waste Liquid/Solid, Waste Corrosive Liquid/Solid	City Environmental Inc., Detroit, MI
02-19-98	MI 4556371	12 Drums, Waste Nitric Acid, Hazardous Waste Liquid, and Waste Corrosive Liquid	City Environmental Inc., Detroit, MI
03-03-98	MI 4370111	25 Cu. Yd. Boxes, RQ Waste Corrosive Solids	Envotech Mgmt. Services Inc., Belleville, MI
03-03-98	MI 4370122	3 Drums (1 Cu. Yd), RQ Waste Corrosive Solids	Envotech Mgmt. Services Inc., Belleville, MI
03-05-98	PAE 8978782	4 Drums, Waste Aerosols, Waste Caustic Alkali Liquid, Waste Corrosive Liquid, and RQ Waste Toxic Solids	Remtech Environmental Inc., Lewisberry, PA
03-05-98	PAE 8978793	4 Drums, Waste Flammable Liquid, Waste Oxidizing Substances (Solid), and Non DOT/RPA Regulated Liquids	Remtech Environmental Inc., Lewisberry, PA
04-23-98	MI 7131182	1 Tank, 2,050 Gallons, RQ Hazardous Waste Liquids	Michigan Recovery Systems Inc., Romulus, MI
05-11-98	MI 7131206	2 Drums, Waste Corrosive Solids	Envotech Mgmt. Services Inc., Belleville, MI

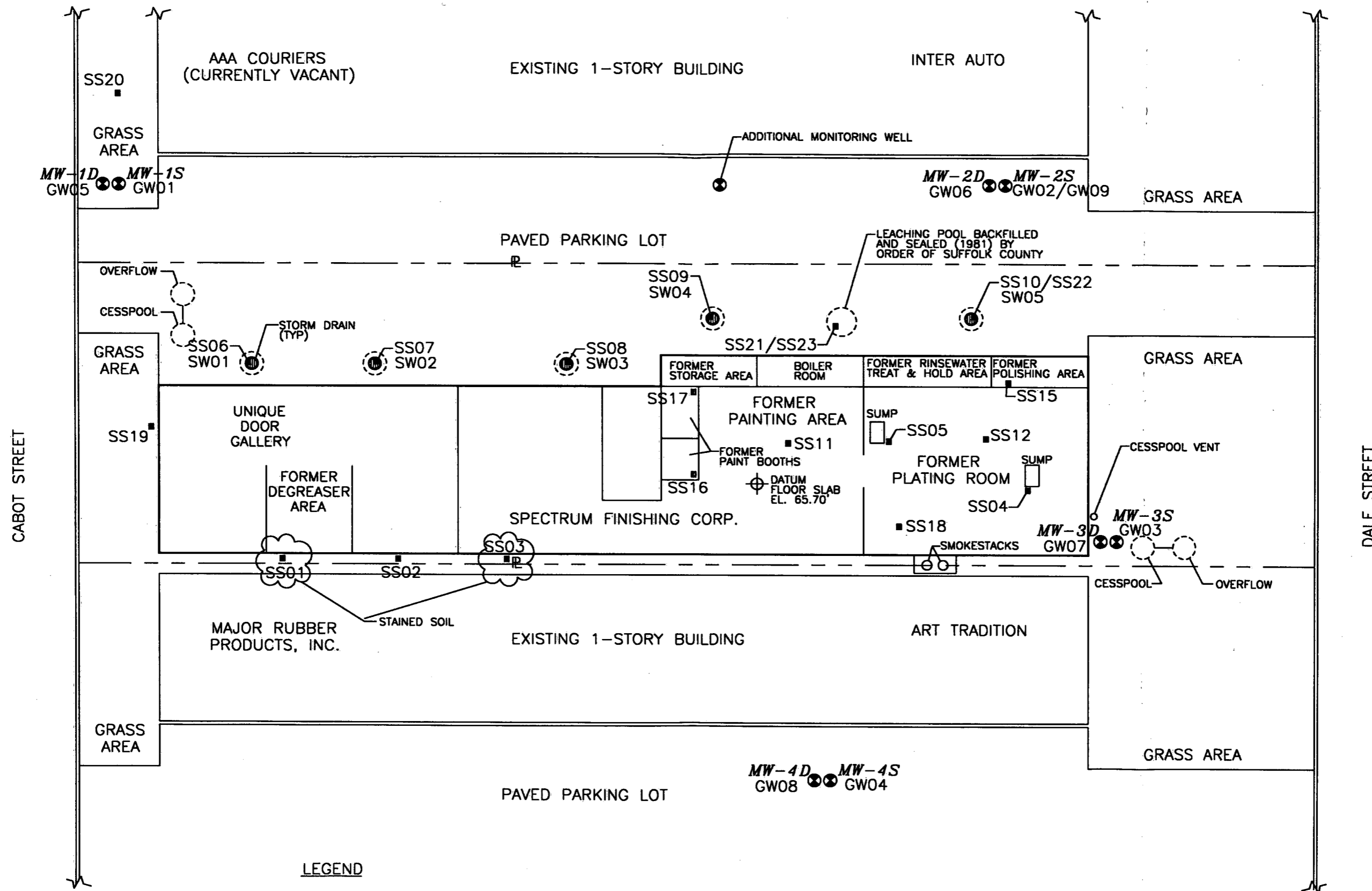
WESTON ARCS conducted an on-site reconnaissance on 21 November 1997 to assess site conditions and identify possible sample locations. During the reconnaissance, WESTON personnel met with a member of the WESTON START team. One trailer for U.S. EPA and WESTON START personnel and another trailer for the emergency response contractor team were located at the site, immediately north of the Spectrum building. WESTON ARCS personnel did not enter the Spectrum building during the on-site reconnaissance, but photographs, a site map, and an inventory of vats located inside the building were supplied by WESTON START. At least five storm drains were observed on the north side of the Spectrum building. Most of the area surrounding the Spectrum building was paved, with the following exceptions (Ref. No. 34, pp. 1-5):

- small lawn areas near the streets on the eastern and western ends of the building;
- an unpaved approximately 6-foot wide alley between the Spectrum building and the building to the south; stained soil was observed at two locations along this alley;
- some small "flower bed" areas (approximately 2-foot wide maximum) at the northern edge of the building, adjacent to paved areas.

The eight monitoring wells installed during the Phase II investigation were located during the on-site reconnaissance. One additional monitoring well was located in the parking lot north of the Spectrum building, approximately 50 feet west of the location of monitoring well MW-2. No residences, schools or daycare centers were located within 200 feet of the site (Ref. No. 34, pp. 2,4).

Since the analytical data generated during the Phase II were not U.S. EPA CLP quality data, WESTON ARCS conducted a sampling event at the Spectrum Finishing Corporation site on 7 and 8 April 1998. The investigation included the collection of 19 soil samples (including one quality control duplicate sample), 5 stormwater/runoff samples, 9 groundwater samples (including one quality control duplicate sample), 4 field blanks, and 2 trip blanks. Five of the soil samples (including two background samples) were collected from the ground surface (from a maximum depth of 12 inches), eight were collected from beneath the concrete floor inside the Spectrum building, and six (including one duplicate sample) were collected from sediments in the bottoms of storm drains. Samples 22-0132-2219 and 22-0132-SS20 are considered background samples. All of the stormwater/runoff samples were collected from water pooled in storm drains. Five of the groundwater samples (including one duplicate sample) were collected from existing shallow groundwater monitoring wells; the other four groundwater samples were collected from existing deep groundwater monitoring wells. Sample 22-0132-GW01, collected from existing upgradient shallow monitoring well MW-1S, and sample 22-0132-GW05, collected from existing upgradient deep monitoring well MW-1D, are considered the upgradient groundwater samples. All of the samples were analyzed for Target Compound List (TCL) organic compounds and Target Analyte List metals and cyanide under the U.S. EPA Contract Laboratory Program (Ref. No. 40).

A summary of the analytical results is presented in Table 7, and Figure 3 provides a Sample Location Map.



LEGEND

- SOIL SAMPLE
- ⊗ GROUND WATER MONITORING WELL
- MW-4S MONITORING WELL NUMBER
- GW04 GROUND WATER SAMPLE NUMBER
(ALL SAMPLE NUMBERS ARE PRECEDED BY 22-0132-)

SCALE: NONE



PROJECT NAME: SPECTRUM FINISHING CORP.
50 DALE STREET
WEST BABYLON, NY

CLIENT NAME: U.S. EPA

SAMPLE LOCATION MAP

DATE: 10/07/98

FIGURE #: 3

Table 7. Summary of Analytical Results for Samples Collected
by Roy F. Weston, Inc. on 7 & 8 April 1993

WESTON Sample No.:	SS01	SS02	SS03	SS04	SS05	SS06	SS07	SS08	SS09	SS10	SS11	SS12	SS15	SS16	SS17	SS18	SS19	SS20	SS22
CLP Sample No.:	BMM-33	BMM-34	BMM-35	BMM-36	BMM-37	BMM-38	BMM-39	BMM-40	BMM-41	BMM-42	BMM-43	BMM-44	BMM-47	BMM-48	BMM-49	BMM-50	BMM-53	BMM-54	BMM-54
Date:	4/7/98	4/7/98	4/7/98	4/8/98	4/8/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/7/98
Matrix:	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Dilution Factor:	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Percent Moisture:	4	8	6	2	5	6	20	30	36	29	3	5	7	4	4	6	7	10	26
Parameter																			
Volatiles																			
Chloromethane			R			R													R
Bromomethane			R			R													R
Vinyl Chloride			R			R													R
Chloroethane			R			R													R
Methylene Chloride			R			R						7J						10J	R
Acetone			R			R													52J
Carbon Disulfide			R			R	3J			8J									R
1,1-Dichloroethene			R			R				8J									R
1,1-Dichloroethane			R			R													R
1,2-Dichloroethene (total)			R			R													R
Chloroform			R			R													R
1,2-Dichloroethane			R			R													R
2-Butanone			R			R	14J												R
1,1,1-Trichloroethane			R		6J	R				30	7J		72	14J					R
Carbon Tetrachloride			R			R													R
Bromodichloromethane			R			R													R
1,2-Dichloropropane			R			R													R
cis-1,3-Dichloropropene			R			R													R
Trichloroethene			R			R													R
Dibromochloromethane			R			R													R
1,1,2-Trichloroethane			R			R													R
Benzene			R			R													R
Trans-1,3-Dichloropropene			R			R													R
Bromoform			R			R													R
4-Methyl-2-Pentanone	R		R																R
2-Hexanone	R		R			R							7J						R
Tetrachloroethene	R		R		180	R						8J		7J					R
1,1,1,2-Tetrachloroethane	R		R			R							3J						R
Toluene	21J	87	R		14J	R		6J		7J									R
Chlorobenzene	R		R			R													R
Ethylbenzene	R		R			R				7J			2J						R
Styrene	R		R			R													R
Xylenes (total)	R		R		6J	R				21J			15						7J

Notes:

Blank Space - compound analyzed for but not detected

B - compound found in lab blank as well as sample. Indicates possible/probable blank contamination.

J - estimated value, compound present below CRQL but above IDL

R - analysis did not pass EPA QA/QC

N - presumptive evidence of the presence of the material

NR - analysis not required

Detection limits elevated if Dilution Factor > 1 and/or percent moisture >0%

* - Values from a diluted analysis.

Shading indicates background samples.

Ref. No. 41

Table 7: Summary of Analytical Results for Samples Collected
 by Roy F. Weston, Inc. on 7-8 April 1998

WESTON Sample No.: CLP Sample No.: Date: Matrix: Units: Dilution Factor:	SW01 BMM-56 4/7/98 aqueous ug/L 1	SW02 BMM-57 4/7/98 aqueous ug/L 1	SW03 BMM-58 4/7/98 aqueous ug/L 1	SW04 BMM-59 4/7/98 aqueous ug/L 1	SW05 BMM-60 4/7/98 aqueous ug/L 1	SW06 BMM-61 4/7/98 aqueous ug/L 1	GW02 BMM-62 4/8/98 aqueous ug/L 1	GW03 BMM-63 4/7/98 aqueous ug/L 1	GW04 BMM-64 4/7/98 aqueous ug/L 1	GW05 BMM-65 4/7/98 aqueous ug/L 1	GW06 BMM-66 4/8/98 aqueous ug/L 1	GW07 BMM-67 4/7/98 aqueous ug/L 1	GW08 BMM-68 4/7/98 aqueous ug/L 1	GW09 BMM-69 4/8/98 aqueous ug/L 1	FB01* BMM-70 4/7/98 aqueous ug/L 1	FB02 BMM-71 4/7/98 aqueous ug/L 1	FB03 BMM-72 4/8/98 aqueous ug/L 1	FB04* BMM-73 4/8/98 aqueous ug/L 5	TB01 BMM-74 4/7/98 aqueous ug/L 1	TB02 BMM-76 4/8/98 aqueous ug/L 1
Parameter																				
Volatiles																				
Chloromethane																				
Bromomethane																				
Vinyl Chloride												5								
Chloroethane																				
Methylene Chloride																0.6J				
Acetone	R	R	R	R	1.1J	R		R	R	R	R	R	R			R	9J	680B,J	R	10J
Carbon Disulfide																				
1,1-Dichloroethene												0.6J								
1,1-Dichloroethane														2	0.8J					
cis-1,2-Dichloroethene							60*	26*	0.8J		29	1300*	4	59*						
trans-1,2-Dichloroethene												4								
Chloroform															2J	5			6	
1,2-Dichloroethane																				
2-Butanone	R	R	R	R	R	R	R	R	R	R	R	R	R	R		R	R		R	R
Bromochloromethane																				
1,1,1-Trichloroethane								0.6J	2	0.8J	0.6J		2	1						
Carbon Tetrachloride																				
Bromodichloromethane																				
1,2-Dichloropropane																				
cis-1,3-Dichloropropene																				
Trichloroethene							45*	16	1	5	15	250*	6	43*						
Dibromochloromethane																				
1,1,2-Trichloroethane																				
Benzene																				
Trans-1,3-Dichloropropene																				
Bromoform															3J					
4-Methyl-2-Pentanone																				
2-Hexanone	R	R	R	R	R	R		R	R	R	R	R	R	R		R	R		R	R
Tetrachloroethene							210*	35*	8	0.8J	24	3500*	21	210*						
1,1,2,2-Tetrachloroethane															3J					
1,2-Dibromomethane																				
Toluene																				
Chlorobenzene																				
Ethylbenzene																				
Styrene																				
Xylenes (total)																				
1,3-Dichlorobenzene																				
1,4-Dichlorobenzene																				
1,2-Dichlorobenzene																				
1,2-Dibromo-3-chloropropane																				
1,2,4-Trichlorobenzene												0.9J								

Notes:

Blank Space - compound analyzed for but not detected

B - compound found in lab blank as well as sample. Indicates possible/probable blank contamination.

J - estimated value, compound present below CRQL but above IDL

R - analysis did not pass EPA QA/QC

N - presumptive evidence of the presence of the material

NR - analysis not required

Detection limits elevated if Dilution Factor > 1 and/or percent moisture > 0%

* - Values from a diluted analysis.

^ - Lab: American Analytical & Technical Services, Inc.

Shading indicates background samples.

Ref. No. 41

Table 7: Summary of Analytical Results for Samples Collected
by Roy F. Weston, Inc. on 7-8 April 1998
(continued)

WESTON Sample No.:	SS01	SS02	SS03	SS04	SS05	SS06	SS07	SS08	SS09	SS10	SS11	SS12	SS15	SS16	SS17	SS18	SS19	SS20	SS22
CLP Sample No.:	BMM-33	BMM-34	BMM-35	BMM-36	BMM-37	BMM-38	BMM-39	BMM-40	BMM-41	BMM-42	BMM-43	BMM-44	BMM-47	BMM-48	BMM-49	BMM-50	BMM-51	BMM-52	BMM-54
Date:	4/7/98	4/7/98	4/7/98	4/8/98	4/8/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/7/98
Matrix:	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Dilution Factor:	3	5	5	1	1	5	5	5	1	5	1	1	1	1	1	1	5	1	5
Percent Moisture:	5	8	10	2	5	17	20	30	36	29	3	5		8	4	6	7	10	26
Parameter																			
Semivolatiles																			
Phenol																			
bis(2-Chloroethyl)Ether													NR						
2-Chlorophenol													NR						
1,3-Dichlorobenzene													NR						
1,4-Dichlorobenzene													NR						
1,2-Dichlorobenzene													NR						
2-Methylphenol													NR						
2,2-Oxybis(1-Chloropropane)													NR						
4-Methylphenol													NR						
N-Nitroso-Di-n-Propylamine													NR						
Hexachloroethane													NR						
Nitrobenzene													NR						
Isophorone										480J			NR						
2-Nitrophenol													NR						
2,4-Dimethylphenol													NR						
bis(2-Chloroethoxy)Methane													NR						
2,4-Dichlorophenol													NR						
1,2,4-Trichlorobenzene													NR						
Naphthalene													NR						
p-Chloroaniline													NR						
Hexachlorobutadiene													NR						
4-Chloro-3-Methylphenol													NR						
2-Methylnaphthalene									7500J	360J			NR						860J
Hexachlorocyclopentadiene									R				NR						
2,4,6-Trichlorophenol													NR						
2,4,6-Trichlorophenol													NR						
2-Chloronaphthalene													NR						
2-Nitroaniline													NR						
Dimethyl Phthalate								440J					NR						
Acenaphthylene													NR						
2,6-Dinitrotoluene													NR						
3-Nitroaniline													NR						
Acenaphthene									1900J				NR						330J
2,4-Dinitrophenol													NR						

Notes:
Blank Space - compound analyzed for but not detected
B - compound found in lab blank as well as sample. Indicates possible/probable blank contamination.
J - estimated value, compound present below CRL but above IDL
R - analysis did not pass EPA QA/QC
N - presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor > 1 and/or percent moisture > 0%
Shading indicates background samples.

Site Name: Spectrum Finishing Corp.
W.O. No.: 04200-022-081-0132
EPA Case No.: 26114
Lab: American Analytical & Technical Services, Inc.

**Table 7: Summary of Analytical Results for Samples Collected
by Roy F. Weston, Inc. on 7-8 April 1998
(continued)**

WESTON Sample No.:	SS01	SS02	SS03	SS04	SS05	SS06	SS07	SS08	SS09	SS10	SS11	SS12	SS15	SS16	SS17	SS18	SS19	SS20	SS22
CLP Sample No.:	BMM-33	BMM-34	BMM-35	BMM-36	BMM-37	BMM-38	BMM-39	BMM-40	BMM-41	BMM-42	BMM-43	BMM-44	BMM-47	BMM-48	BMM-49	BMM-50	BMM-51	BMM-52	BMM-54
Date:	4/7/98	4/7/98	4/7/98	4/8/98	4/8/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/7/98
Matrix:	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Dilution Factor:	3	5	5	1	1	5	5	5	1	5	1	1			1	1	1	1	5
Percent Moisture:	5	8	10	2	5	17	20	30	36	28	3	5		8	4	6	7	10	26
Parameter																			
Semivolatiles																			
4-Nitrophenol																			
Dibenzofuran													NR						
2,4-Dinitrotoluene													NR						
Diethylphthalate													NR						
4-Chlorophenyl-phenylether													NR						
Fluorene													NR						
4-Nitroaniline									3600J				NR						
4,6-Dinitro-2-Methylphenol													NR						
N-Nitrosodiphenylamine										1100J			NR						
4-Bromophenyl-phenylether													NR				640J		
Hexachlorobenzene													NR						
Pentachlorophenol													NR						
Phenanthrene	170J						280J	420J	11000J	1400J			NR						
Anthracene					61J								NR						3000
Carbazole													NR						250J
Di-n-Butylphthalate						18000*							NR						
Fluoranthene	900J	240J	200J				240J	900J		300J			NR						
Pyrene	1600	220J				310J	370J	1100J		470J			NR						630J
Butylbenzylphthalate		1300J	830J			1100J	2000J	17000	62000J	3200		87J	NR	140J		70J			1200J
3,3'-Dichlorobenzidine													NR						5000
Benzo(a)Anthracene	380J												NR						
Chrysene	380J							280J					NR						
bis[2-Ethylhexyl]phthalate	1000J	4500	2800	67J	6700*	8000	7900*	35000*	62000J	16000		900	NR	66J			370J	160J	19000*
Di-n-Octyl Phthalate					200J	360J	630J	1500J		840J			NR						16000J
Benzo(b)Fluoranthene													NR						240J
Benzo(k)Fluoranthene								380J					NR						160J
Benzo(a)Pyrene								270J					NR						
Indeno[1,2,3-cd]Pyrene													NR						
Dibenz(a,h)Anthracene													NR						
Benzo(g,h,i)Perylene													NR						

Notes:

Blank Space - compound analyzed for but not detected
B - compound found in lab blank as well as sample. Indicates possible/probable blank contamination.
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor > 1 and/or percent moisture > 0%

* - Value in a dilution factor.
Shading indicates background samples.
Ref. No. 41

cs\Volu\stcrs2
Site Name: Spectrum Finishing Corp.
W.O. No.: 04200-022-081-0132
EPA Case No.: 26114
Lab: American Analytical & Technical Services, Inc.

Table 7: Summary of Analytical Results for Samples Collected
by Roy F. Weston, Inc. on 7-8 April 1998
(continued)

WESTON Sample No.:	SW01	SW02	SW03	SW04	SW05	GW01	GW02	GW03	GW04	GW05	GW06	GW07	GW08	GW09	FB01	FB02	FB03	FB04	TB01	TB02
CLP Sample No.:	BMM-56	BMM-57	BMM-58	BMM-59	BMM-60	BMM-61	BMM-62	BMM-63	BMM-64	BMM-65	BMM-66	BMM-67	BMM-68	BMM-69	BMM-70	BMM-71	BMM-72	BMM-73	BMM-74	BMM-75
Date:	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/8/98	4/7/98	4/7/98	4/7/98	4/8/98	4/7/98	4/7/98	4/8/98	4/7/98	4/7/98	4/8/98	4/8/98	4/7/98	4/8/98
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Dilution Factor:	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Parameter																				
Semivolatiles																				
4-Nitrophenol																			NR	NR
Dibenzofuran																			NR	NR
2,4-Dinitrotoluene																			NR	NR
Diethylphthalate																			NR	NR
4-Chlorophenyl-phenylether																			NR	NR
Fluorene																			NR	NR
4-Nitroaniline																			NR	NR
4,6-Dinitro-2-Methylphenol																			NR	NR
N-Nitrosodiphenylamine																			NR	NR
4-Bromophenyl-phenylether																			NR	NR
Hexachlorobenzene																			NR	NR
Pentachlorophenol																			NR	NR
Phenanthrene																			NR	NR
Anthracene																			NR	NR
Carbazole																			NR	NR
Di-n-Butylphthalate																2J			NR	NR
Fluoranthene																			NR	NR
Pyrene																			NR	NR
Butylbenzylphthalate																			NR	NR
3,3'-Dichlorobenzidine																			NR	NR
Benzo(e)Anthracene																			NR	NR
Chrysene																			NR	NR
bis(2-Ethylhexyl)phthalate	6J	3J		2J					1J										NR	NR
Di-n-Octyl Phthalate																			NR	NR
Benzo(b)Fluoranthene																			NR	NR
Benzo(k)Fluoranthene																			NR	NR
Benzo(a)Pyrene																			NR	NR
Indeno(1,2,3-cd)Pyrene																			NR	NR
Dibenz(a,h)Anthracene																			NR	NR
Benzo(g,h,i)Perylene																			NR	NR

Notes:
Blank Space - compound analyzed for but not detected
B - compound found in lab blank as well as sample. Indicates possible/probable blank contamination.
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
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cs\lotus\arcs2
Site Name: Spectrum Finishing Corp.
W.O. No.: 04200-022-081-0132
EPA Case No.: 26114
Lab: American Analytical & Technical Services, Inc.

**Table 7: Summary of Analytical Results for Samples Collected
by Roy F. Weston, Inc. on 7-8 April 1998
(continued)**

WESTON Sample No.: CLP Sample No.: Date: Matrix: Units: Dilution Factor: Percent Moisture:	SS01	SS02	SS03	SS04	SS05	SS06	SS07	SS08	SS09	SS10	SS11	SS12	SS15	SS16	SS17	SS18	SS19	SS20	SS22
	BMM-33	BMM-34	BMM-35	BMM-36	BMM-37	BMM-38	BMM-39	BMM-40	BMM-41	BMM-42	BMM-43	BMM-44	BMM-47	BMM-48	BMM-49	BMM-50	BMM-51	BMM-52	BMM-54
	4/7/98	4/7/98	4/7/98	4/8/98	4/8/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/7/98
	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil
	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
	1	1	1	1	2	1	10	1	1	1	1	1		1	1	1	1	1	1
	5	8	10	2	5	17	20	30	36	29	3	5		4	4	6	7	10	26
Parameter																			
Pesticides																			
alpha-BHC	R		1.8J		9.1N,J		R		2.6N,J			R	NA		R	R			2.8J
beta-BHC	R						R		3.3N,J	4.0J		R	NA		R	R			
delta-BHC							R					R	NA		R	R			
gamma-BHC(Lindane)							R					R	NA		R	R			
Heptachlor							R					R	NA		R	R			
Aldrin							R					R	NA		R	R			
Heptachlor epoxide			2.5N,J		R		R					R	NA		R	R	2.4N,J		
Endosulfan I					R		R		R			R	NA		R	R	7.8N,J		
Dieldrin	14J	28N,J	R		R	19N,J	270N,J	15N,J	16J	15J		R	NA		R	R	17J		17J
4,4'-DDE	31J	24J	6.6N,J	3.6J		18J	250N,J	R	24J	29J	1.9J	R	NA		R	R	18J	31N,J	30J
Endrin	R						R					R	NA		R	R			
Endosulfan II					R		R			14J		R	NA		R	R	R		14J
4,4'-DDD					R		R			15N,J		R	NA		R	R			15N,J
Endosulfan sulfate		33J	R		44N,J	14J	390N,J	26J	17J	16J		3.6J	NA		R	R	23N,J		18N,J
4,4'-DDT		R		5.6N,J		R	R	R				R	NA		R	R	50J	38N,J	R
Methoxychlor		25N,J					260J	R	68N,J			R	NA		R	R	R		R
Endrin ketone					R		R		7.9J			R	NA		R	R	R		
Endrin sidehyda	16J	20N,J	4.1J		700N,J*	14N,J	300N,J	14N,J	18N,J	18J		R	NA		R	R	60J		17J
alpha-Chlordane						6.8N,J	R	6.0N,J	7.9N,J	6.8J		R	NA		R	R			8.2N,J
gamma-Chlordane		R	9.8J		140N,J*	R	R	31N,J	9.4N,J	R		R	NA		R	R	R		R
Toxaphene							R					R	NA		R	R			
Aroclor-1018							R					R	NA		R	R			
Aroclor-1221							R					R	NA		R	R			
Aroclor-1232							R					R	NA		R	R			
Aroclor-1242							R					R	NA		R	R			
Aroclor-1248							R					R	NA		R	R			
Aroclor-1254		1000J	320J	83J		940J	10000J	530J	540J	440J		140J	NA		37N,J	86J			500N,J
Aroclor-1260							R					R	NA		R	R			

Notes:
 Blank Space - compound analyzed for but not detected
 B - compound found in lab blank as well as sample. Indicates possible/probable contamination.
 J - estimated value, compound present below CROL but above IDL
 R - analysis did not pass EPA QA/QC
 N - presumptive evidence of the presence of the material

NR - Not required
 Detection limits elevated if Dilution Factor > 1 and/or percent moisture > 0%
 * - Values from a diluted analysis.
 Shading indicates background samples.
 Ref. No. 41

cs\lotus\arcs2
 Site Name: Spectrum Finishing Corp.
 W.O. No.: 04200-022-081-0132
 EPA Case No.: 26114
 Lab: American Analytical & Technical Services, Inc.

Table 7: Summary of Analytical Results for Samples Collected
 by Roy F. Weston, Inc. on 7-8 April 1998
 (continued)

WESTON Sample No.:	SW01	SW02	SW03	SW04	SW05	GW01	GW02	GW03	GW04	GW05	GW06	GW07	GW08	GW09	FB01	FB02	FB03	FB04	TB01	TB02
CLP Sample No.:	BMM-56	BMM-57	BMM-58	BMM-59	BMM-60	BMM-61	BMM-62	BMM-63	BMM-64	BMM-65	BMM-66	BMM-67	BMM-68	BMM-69	BMM-70	BMM-71	BMM-72	BMM-73	BMM-74	BMM-75
Date:	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/8/98	4/7/98	4/7/98	4/7/98	4/8/98	4/7/98	4/7/98	4/8/98	4/7/98	4/7/98	4/8/98	4/8/98	4/7/98	4/8/98
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Dilution Factor:	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Parameter																				
Pesticides																				
alpha-BHC																			NA	NA
beta-BHC																			NA	NA
delta-BHC																			NA	NA
gamma-BHC(Lindane)																			NA	NA
Heptachlor																			NA	NA
Aldrin																			NA	NA
Heptachlor epoxide																			NA	NA
Endosulfan I																			NA	NA
Dieldrin																			NA	NA
4,4'-DDE																			NA	NA
Endrin																			NA	NA
Endosulfan II																			NA	NA
4,4'-DDD																			NA	NA
Endosulfen sulfate																			NA	NA
4,4'-DDT																			NA	NA
Methoxychlor																			NA	NA
Endrin ketone																			NA	NA
Endrin aldehyde																			NA	NA
alpha-Chlordane																			NA	NA
gamma-Chlordane																			NA	NA
Toxaphene																			NA	NA
Aroclor-1016																			NA	NA
Aroclor-1221																			NA	NA
Aroclor-1232																			NA	NA
Aroclor-1242																			NA	NA
Aroclor-1248																			NA	NA
Aroclor-1254																			NA	NA
Aroclor-1260																			NA	NA

Notes:
 Blank Space - compound analyzed for but not detected
 B - compound found in lab blank as well as sample. Indicates possible/probable blank contamination.
 J - estimated value, compound present below CROL but above IDL
 R - analysis did not pass EPA QA/QC

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Site Name: Spectrum Finishing Corp.
W.O. No.: 04200-022-081-0132
EPA Case No.: 26114
Lab: American Analytical & Technical Services, Inc.

Parameter	WESTON Sample No.:	SS01	SS02	SS03	SS04	SS05	SS06	SS07	SS08	SS09	SS10	SS11	SS12	SS16	SS16	SS17	SS18	SS19	SS20	SS22	
	CLP Sample No.:	MBKL-09	MBKL-10	MBKL-11	MBKL-12	MBKL-13	MBKL-14	MBKL-15	MBKL-16	MBKL-17	MBKL-18	MBKL-19	MBKL-20	--	MBKL-24	MBKL-26	MBKL-28	MBKL-29	MBKL-30	MBKL-30	
	Date:	4/7/98	4/7/98	4/7/98	4/8/98	4/8/98	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/8/98	4/7/98
	Matrix:	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Metals																					
Aluminum		3760	2210	1940	1740	2460	1460	7280	4310	6710	5720	2120	409	NR	2270	2050	5350	6150	9240	5010	
Antimony		3.1B,J	6.2B,J	1.9B,J		0.94B	3.7B,J	12.0B,J	48.5J	278J	3.6B,J		NR	NR				0.90B,J	3.6B,J		
Arsenic		2.3	1.8B	1.9B	3.0J	3.6	2.3	7.3	6.5	16.4	4.2	1.5B,J	1.1B,J	NR	1.7B,J	1.6B,J	1.8B,J	2.3J	4.2J	3.4	
Barium		21.6B	28.7B	14.7B	4.8B	11.8B	16.4B	89.7	108	809	94.6	8.4B	45.7	NR	9.7B	8.9B	14.4B	17.0B	19.2B	172	
Beryllium			0.27B					0.29B		0.35B	0.36B			NR						0.36B	
Cadmium		26.0	281	34.1	797	112	291	6470	367	308	625	1.1	5.9	NR	0.88B		40.6	1.7	0.60B	483	
Calcium		5490	4300	4440	929B	419B	9650	19500	10800	8620	14500	441B	3080	NR	2460	1400	1310	2430	1180	18000	
Chromium		114	129	30.5	30.3J	350	81.9	1950	4340	2790	1890	7.0J	133J	NR	4.9J	3.0J	357J	11.0J	10.5J	1450	
Cobalt		2.6B	7.5B	1.6B	0.92B	1.2B	1.6B	6.7B	7.5B	13.7J	9.0B	5.0B	0.26B	NR	53.0	13.9	12.8	1.4B	2.0B	6.8B	
Copper		190	109	17.1	118	103	83.7	571	472	408	764	6.1	99.4	NR	6.4	5.8	78.8	7.5	8.1	687	
Iron		9590	7300	3850	3390	4120	3990	11500	12900	75400	17800	3930	3590	NR	4480	4880	6920	6580	10300	13500	
Lead		47.1J	66.4J	18.9J	1.4J	8.0	112J	485J	309J	563J	653J	2.0J	123	NR	2.8	2.4	6.9	22.6	20.3	267J	
Magnesium		3250	1910	2500	285B	342B	5880	11100	6290	5530	7710	527B	39.2B	NR	575B	495B	711B	1300	918B	9320	
Manganese		117	82.7	79.6	126	54.1	28.9	175	93.6	466	120	94.7	17.1	NR	100	139	220	59.9	77.2	100	
Mercury														NR	0.34	0.15J		0.07B,J	0.07B,J		
Nickel		85.6	82.9	15.1	14.5	176	44.5	728	363	640	1090	10.1	150	NR	4.4B	2.9B	1630	4.7B	5.4B	1400	
Potassium		261B	139B	146B	303B	681B	114B	307B	274B	232B	313B	259B	109B	NR	308B	322B	367B	325B	208B	368B	
Selenium		0.84B				1.7		2.0		5.3	2.2			NR						1.6	
Silver			2.5				0.33B														

Notes:
Blank space - compound analyzed for but not detected
J - estimated value

B - estimated value, compound present but not detected
 R - analysis did not pass EPA QA/QC
 NR - analysis not required
 Shading indicates background samples.
 Ref. No. 41

cs\lotus\srcs2
 Site Name: Spectrum Finishing Corp.
 W.O. No.: 04200-022-081-0132
 EPA Case No.: 26114
 Lab: American Analytical & Technical Services, Inc.

Table 7: Summary of Analytical Results for Samples Collected
 by Roy F. Weston, Inc. on 7-8 April 1988
 (continued)

WESTON Sample No.: CLP Sample No.: Date: Matrix: Units:	SW01 MBKL-32 4/7/98 aqueous ug/L	SW02 MBKL-33 4/7/98 aqueous ug/L	SW03 MBKL-34 4/7/98 aqueous ug/L	SW04 MBKL-35 4/7/98 aqueous ug/L	SW05 MBKL-36 4/7/98 aqueous ug/L	SW06 MBKL-37 4/7/98 aqueous ug/L	GW02 MBKL-38 4/8/98 aqueous ug/L	GW03 MBKL-39 4/7/98 aqueous ug/L	GW04 MBKL-40 4/7/98 aqueous ug/L	GW05 MBKL-41 4/7/98 aqueous ug/L	GW06 MBKL-42 4/8/98 aqueous ug/L	GW07 MBKL-43 4/7/98 aqueous ug/L	GW08 MBKL-44 4/7/98 aqueous ug/L	GW09 MBKL-45 4/8/98 aqueous ug/L	FB01 MBKL-46 4/7/98 aqueous ug/L	FB02 MBKL-47 4/7/98 aqueous ug/L	FB03 MBKL-48 4/8/98 aqueous ug/L	FB04 MBKL-49 4/8/98 aqueous ug/L	TB01 -- 4/7/98 aqueous ug/L	TB02 -- 4/8/98 aqueous ug/L
Parameter																				
Metals																				
Aluminum	R	R	R	R	R	R	R	R	R	R	R	R	R	R		R	R	R		NR
Antimony																				NR
Arsenic						5.7B	6.9B	7.4B						5.3B						NR
Barium	20.5B	10.4B	11.0B	7.2B	10.9B	52.1B	56.3B	87.7B	35.5B	45.8B	49.6B	60.2B	53.5B	56.1B		1.4B	1.7B	1.1B		NR
Beryllium																				NR
Cadmium	41.4	27.0	71.6	21.2	22.4	3.0B	13.8	21.5	13.2	1.4B	6.7		3.6B	14.6	7	2.9B	3.2B	3.0B		NR
Calcium	7820	3450B	3770B	2620B	2680B	29700	24900J	17300	10600	12600	16700	17300	15300	18300J	59.6B	119B	540B	157B		NR
Chromium	28.4	9.0B	61.8	12.0	7.4B	7.0B	11.8	40B	38.8	1.2B	2.0B		16.8	10.4						NR
Cobalt	1.4B		1.1B	1.1B		6.6B	2.9B	14.0B	3.8B				1.0B	2.3B						NR
Copper	44.6J	20.7B	81.4J	26.7J	33.9J	36.7J	241	213J	103J	15.7B	11.8B	2.7B	31.1J	229						NR
Iron	1080	216	417	288	319	6410	5070	14300	782	266	727	192	204	4800	439	334	186	135		NR
Lead	30.5	4.3	20.4	4.3	3.3	11.6	132	14.4	4.8	8.2	10.4	2.4B	2.8B	124						NR
Magnesium	3400B	733B	1100B	661B	616B	2940B	4860B	5090	2380B	3010B	3600B	3370B	3260B	4480B		226B				NR
Manganese	39.9	13.4B	37.8	14.7B	11.5B	525	85.8	1010	39.7	55.2	47.6	247	42.4	74.7	1.6B	1.7B	1.5B	1.1B		NR
Mercury																				NR
Nickel	48.2	27.5B	193	38.0B	26.5B	8.1B	9.5B	60.4	141		2.7B	1.2B	3.6B	7.4B		1.1B	2.2B			NR
Potassium	207B					2460B	1790B	2450B	1180B	1920B	2550B	2270B	2210B	1770B	41.2B	102B	65.6B	58.4B		NR
Selenium																				NR
Silver	1.0B			1.2B	1.1B	1.0B	8.7B		1.0B				1.4B	5.5B						NR
Sodium	930B	776B	1390B	654B	831B	14000	8780	8330	35500	11300	14900	20100	12800	7270	118B	140B	288B	377B		NR
Thallium																				NR
Vanadium	3.7B	2.4B	2.6B	2.8B	2.6B	8.5B	6.3B	16.6B	1.8B				4.9B							NR
Zinc	201J	153J	128J	301J	144J	135J	59.2	124J	89.1J	61.2J	41.4	34.9J	38.9J	44.7	11.0B	11.0B	49.9	12.5B		NR
Cyanide	3.0B	3.6B	18.4	5.3B	1.4B			11.5	12.6	1.4B			26.2		1.1B		1.9B			NR

Notes:
 Blank space - compound analyzed for but not detected
 J - estimated value
 B - estimated value, compound present below CRDL but above IDL
 R - analysis did not pass EPA QA/QC
 NR - analysis not required
 Shading indicates background samples.
 Ref. No. 41

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Analytical results indicate that the following contaminants were detected in on-site surficial soil samples (samples 22-0132-SS01, 22-0132-SS02, and 22-0132-SS03) at levels at least three times greater than the background concentrations or greater than the background sample quantitation limit: toluene, bis(2-ethylhexyl)phthalate, Aroclor-1254, antimony, beryllium, cadmium, chromium, cobalt, copper, nickel, silver, thallium, zinc, and cyanide. Two pesticides, heptachlor epoxide (actually a transformation product of heptachlor), and gamma chlordane, were also detected in these samples at levels at least three times greater than the background concentrations or greater than the background sample quantitation limit; however, pesticides were not known to be used at the site and are therefore not attributable to the site (Ref. No. 41, pp. 3-124, 125-130, 157-160, 163-171, 208-213, 217-219, 232, 233, 393-436, 437-439, 457-462, 470-471). Toluene, beryllium, cadmium, chromium, copper, nickel, zinc, and cyanide are known to have been used on-site, and therefore are attributable to site activities (Ref. Nos. 4, pp. 8, 10, 13, 14, 18; 14; 51). Cobalt, silver, and Aroclor-1254 (a polychlorinated biphenyl) are also known to be associated with electroplating facilities and therefore are attributable to the site (Ref. No. 52, pp. 137-138). Bis(2-ethylhexyl)phthalate, antimony, and thallium are not known to have been used on-site and thus are not attributable to the site.

Analytical results indicate that the following contaminants were detected in sediment samples collected from the bottoms of on-site storm drains (samples 22-0312-SS06, 22-0312-SS07, 22-0312-SS08, 22-0312-SS09, 22-0312-SS10, and 22-0312-SS22) at levels at least three times greater than the background concentrations or greater than the background sample quantitation limit: 2-butanone, xylene, fluorene, phenanthrene, di-n-butylphthalate, butylbenzylphthalate, bis(2-ethylhexyl)phthalate, 2-methylnaphthalene, acenaphthene, Aroclor-1254, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, selenium, silver, thallium, vanadium, zinc, and cyanide. Pesticides were detected in the sediment samples at levels at least three times greater than the background concentrations or greater than the background sample quantitation limit, but the data were qualified and the pesticides are not attributable to the site (Ref. No. 41, pp. 3-124, 135-144, 157-160, 161-162, 178-192, 208-213, 214-216, 222-226, 232-234, 393-436, 440-445, 457-462, 470-471). 2-Butanone, toluene, beryllium, cadmium, calcium, chromium, copper, iron, magnesium, manganese, nickel, zinc, and cyanide are known to have been used on-site, therefore they are attributable to site activities (Ref. Nos. 4, pp. 8, 10, 13, 14, 18; 14; 51). Xylene, cobalt, lead, silver, and Aroclor-1254 (a polychlorinated biphenyl) are also known to be associated with electroplating facilities and therefore are attributable to the site (Ref. No. 52, pp. 137-138). Fluorene, phenanthrene, di-n-butylphthalate, butylbenzylphthalate, bis(2-ethylhexyl)phthalate, 2-methylnaphthalene, acenaphthene, antimony, arsenic, barium, selenium, thallium, and vanadium are not known to have been used on-site and thus are not attributable to the site.

Analytical results indicate that the following contaminants were detected in soil samples collected from beneath the concrete floor inside the Spectrum building (samples 22-0132-SS04, 22-0312-SS05, 22-0312-SS11, 22-0312-SS12, 22-0312-SS15, 22-0312-SS16, 22-0312-SS17, and 22-0312-SS18) at levels at least three times greater than the off-site background concentrations or greater than the background sample quantitation limit: 2-butanone, tetrachloroethene, xylene, bis(2-ethylhexyl)phthalate, Aroclor-1254, cadmium, chromium, cobalt, copper, lead, mercury, nickel,

selenium, silver, sodium, zinc, and cyanide. Pesticides were detected in the soil samples collected from beneath the concrete floor at levels at least three times greater than the background concentrations or greater than the background sample quantitation limit, but the data were qualified and pesticides are not attributable to the site (Ref. No. 41, pp. 3-124, 131-134, 145-160, 172-177, 193-213, 220-221, 227-233). 2-Butanone, cadmium, chromium, copper, nickel, sodium, zinc, and cyanide are known to have been used on-site, therefore they are attributable to site activities (Ref. Nos. 4, pp. 8, 10, 13, 14, 18; 14; 51). Tetrachloroethene (a solvent), cobalt, lead, mercury, silver, and Aroclor-1254 (a polychlorinated biphenyl) are also known to be associated with electroplating facilities and therefore are attributable to the site (Ref. No. 52, pp. 137-138). Bis(2-ethylhexyl)phthalate and selenium are not known to have been used on-site and thus are not attributable to the site.

Analytical results indicate that the following contaminants were detected in stormwater/runoff samples collected from water pooled in storm drains: barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, silver, sodium, vanadium, zinc, cyanide (Ref. No. 41, pp. 235-237, 242-256, 296-300, 355-364, 446-450). Cadmium, calcium, chromium, copper, iron, magnesium, manganese, nickel, potassium, sodium, zinc, and cyanide are known to have been used on-site, therefore they are attributable to site activities (Ref. Nos. 4, pp. 8, 10, 13, 14, 18; 14; 51). Cobalt, lead, and silver are also known to be associated with electroplating facilities and therefore are attributable to the site (Ref. No. 52, pp. 137-138). Barium and vanadium are not known to have been used on-site and thus are not attributable to the site.

The following substances were detected in groundwater samples 22-0132-GW02 and 22-0132-GW09 collected from sidegradient shallow monitoring well MW-2S at concentrations greater than three times the concentrations detected in upgradient sample 22-0132-GW01 or greater than the upgradient sample quantitation limit: 1,2-dichloroethene, tetrachloroethene, cadmium, copper, lead, and silver. The following substances were detected in groundwater sample 22-0132-GW03 collected from downgradient shallow monitoring well MW-3S at concentrations greater than three times the concentrations detected in upgradient sample 22-0132-GW01 or greater than the upgradient sample quantitation limit: 1,2-dichloroethene, trichloroethene, tetrachloroethene, cadmium, chromium, copper, nickel, and cyanide. The following substances were detected in groundwater sample 22-0132-GW04 collected from downgradient shallow monitoring well MW-4S at concentrations greater than three times the concentrations detected in upgradient sample 22-0132-GW01 or greater than the upgradient sample quantitation limit: 1,1,1-trichloroethane, tetrachloroethene, cadmium, chromium, copper, nickel, and cyanide (Ref. No. 41, pp. 235-237, 257-268, 281-283, 301-304, 309, 393-436, 451-453, 457-462, 472, 474). 1,1,1-trichloroethane, cadmium, chromium, copper, nickel, and cyanide are known to have been used on-site, and therefore are attributable to site activities (Ref. Nos. 4, pp. 8, 10, 13, 14, 18; 14; 51). 1,2-Dichloroethene and tetrachloroethene (both of which are solvents), lead, and silver are also known to be associated with electroplating facilities and therefore are attributable to the site (Ref. No. 52, pp. 137-138).

The following substances were detected in groundwater sample 22-0132-GW06 collected from sidegradient deep monitoring well MW-2D at concentrations greater than three times the concentrations detected in upgradient sample 22-0132-GW05 or greater than the upgradient

sample quantitation limit: 1,2-dichloroethene, trichloroethene, tetrachloroethene, cadmium, and nickel. The following substances were detected in groundwater sample 22-0132-GW07 collected from downgradient deep monitoring well MW-3D at concentrations greater than three times the concentrations detected in upgradient sample 22-0132-GW05 or greater than the upgradient sample quantitation limit: vinyl chloride, 1,2-dichloroethene, trichloroethene, tetrachloroethene, manganese, and nickel. The following substances were detected in groundwater sample 22-0132-GW08 collected from downgradient deep monitoring well MW-4D at concentrations greater than three times the concentrations detected in upgradient sample 22-0132-GW05 or greater than the upgradient sample quantitation limit: 1,1-dichloroethane, 1,2-dichloroethene, tetrachloroethene, chromium, nickel, silver, and cyanide (Ref. No. 41, pp. 235-237, 242-256, 269-280, 296-300, 305-308, 393-436, 454-462, 473). Trichloroethene, cadmium, chromium, manganese, nickel, and cyanide are known to have been used on-site, and therefore are attributable to site activities (Ref. Nos. 4, pp. 8, 10, 13, 14, 18; 14; 51). 1,2-Dichloroethene and tetrachloroethene (both of which are solvents), 1,1-dichloroethane, and silver are also known to be associated with electroplating facilities and therefore are attributable to the site (Ref. No. 52, pp. 137-138). Vinyl chloride is a degradation product of chlorinated solvents known to have been used at the site (Ref. No. 53).

The NYSDEC has expressed interest in performing a full-scale remedial investigation/feasibility study (RI/FS) at the site. However, a NYSDEC representative more recently stated that NYSDEC will determine whether to perform an RI/FS pending results of sampling conducted by WESTON ARCS on behalf of U.S. EPA in April 1998. (Ref. Nos. 34, p. 21; 39; 43). U.S. EPA's Response and Prevention Branch has stated that the site will be referred back to NYSDEC to investigate any soil or groundwater contamination. The Spectrum building is currently locked and generally inaccessible to the public, other than the western portion of the building now occupied by Unique Door Gallery (Ref. Nos. 49, 50). There are no fences around the building; storm drains and areas of stained soil on the south side of the building are accessible to the public (Ref. No. 34, p. 4).

EVALUATION OF EXISTING INFORMATION

Existing information and analytical data, primarily from the Phase I Investigation Report, the Phase II Investigation Draft Report, and the supporting documentation files, were used to conduct an evaluation of the site. Analytical results of the subsurface soil samples collected during the Phase II investigation by GRB initially were used to characterize the soil contamination resulting from SFC's operations. Updated and additional information was also used to evaluate the site and to determine the need for CERCLA remedial action. Once it was determined, during the internal review process, that analytical data from the Phase II investigation would be rejected or qualified as unusable if it were validated using Region 2 Contract Laboratory Program (CLP) methods, WESTON conducted the sampling event discussed above in April 1998. Data from the April 1998 sampling event were then used to evaluate the site and characterize any on-site contamination. The information used to reevaluate the current site status included groundwater population data within a 4-mile radius, wellhead protection area information, and 1990 census population data and sensitive environments information, including threatened and endangered species habitats, within 4 miles of the site.

HAZARD ASSESSMENT

Groundwater Migration Pathway An observed release of hazardous substances to groundwater from the SFC site has been documented. 1,2-Dichloroethene, trichloroethene, tetrachloroethene, cadmium, chromium, copper, lead, nickel, silver, and cyanide were detected in shallow groundwater samples at concentrations at least three times greater than the upgradient concentration or above the detection limit when the analyte was not detected in the upgradient groundwater sample (Ref. No. 41, pp. 235-237, 257-268, 281-283, 301-304, 309, 393-436, 451-453, 457-462, 472, 474). 1,2-Dichloroethene, trichloroethene, tetrachloroethene, vinyl chloride, cadmium, chromium, manganese, nickel, silver, and cyanide were detected in the deeper groundwater samples at concentrations at least three times higher than the upgradient groundwater sample or at concentrations above the detection limit when the analyte was not detected in the upgradient groundwater sample (Ref. No. 41, pp. 235-237, 242-256, 269-280, 296-300, 305-308, 393-436, 454-462, 473).

The SFC site is underlain by Pleistocene-age glacial deposits consisting of sand and gravel outwash deposits, silt, clay and mixtures thereof. The Pleistocene-age deposits are underlain by the Cretaceous-age Magothy Formation, which consists of fine- to medium-grained sand and gravel interbedded with silt and clay, the Raritan Clay, and the Lloyd Sand Member, which is composed of fine- to coarse-grained sand and gravel interbedded with clay and silt. The Cretaceous deposits are underlain by Precambrian-age bedrock, consisting of gneiss, schist and granite (Ref. Nos. 15; 31, pp. E3-E6).

The aquifers of concern within the study area are the shallow Glacial Outwash Aquifer and the Magothy Formation Aquifer (Ref. No. 17). The Glacial Outwash lies directly beneath the site and consists of up to 200 feet of Pleistocene-age glacial outwash deposits of sand and gravel (Ref. No. 15). The hydraulic conductivity of the Upper Glacial Aquifer has reported to be 9.5×10^{-2} centimeters per second (cm/s) and exists under unconfined (water table) conditions (Ref. No. 2, p. 10).

The Magothy Formation underlies the Upper Glacial aquifer system in the vicinity of the site (Ref. No. 17). This aquifer consists of up to 1,100 feet of Cretaceous-age deposits of sand, gravel, silt, and clay (Ref. No. 31, p. E6). The average hydraulic conductivity of this aquifer is approximately 1.9×10^{-2} cm/s (410 gpd/ft²) (Ref. No. 31, pp. E20, E21). The Magothy Aquifer and the Glacial Outwash Aquifer are separated by approximately 0 to 10 feet of clay (Gardiners Clay unit) (Ref. No. 16). The Gardiners Clay unit is not continuous; therefore, the two aquifers are considered to be hydraulically interconnected (Ref. Nos. 16, pp. 2, 3; 17; 31, p. E4).

The depth to groundwater at the site was approximately 22 feet bgs in November 1997 and ranged from 15.5 to 16.3 feet bgs in April 1998 (Ref. No. 34, pp. 2, 23-28). The regional and local groundwater flow direction is toward the southeast (Ref. No. 2, p. 10). Twenty-two well fields of the Suffolk County Water Authority, the Plainview Water District, the South Farmingdale Water Authority, the Massapequa Water Authority, and the Farmingdale Water Authority are located within 4 miles of the site (Ref. Nos. 3; 24). These well fields contain 58 wells; 57 of the wells were constructed within the Magothy Formation and 1 well was constructed within the Glacial Outwash

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aquifer (Ref. No. 24). Deep Flow Recharge Areas have been designated as well head protection areas (WHPAs) on Long Island; SFC does not overlie a WHPA but a WHPA is located within 4 miles of the site (Ref. Nos. 18; 19).

The nearest potable well (a municipal well) obtaining water from the Upper Glacial Outwash Aquifer is located approximately 1.8 miles northeast of the site. The nearest potable well (a municipal well) obtaining water from the deep Magothy Formation is located approximately 1.2 miles southeast of the site. The population served by each public municipal well was determined by dividing the total population served by each water district/system by the total number of municipal wells within the water district/system. Approximately 2,310 people obtain drinking water from the Glacial Outwash Aquifer within a 4-mile radius of the site (0-1 mile: 0; 1-2 miles: 2,310; 2-4 miles: 0). Approximately 163,900 people obtain drinking water from the Magothy Formation Aquifer from wells that are located within a 4-mile radius of the site (0-1 mile: 0; 1-2 miles: 20,790; 2-3 miles: 50,820; 3-4 miles: 92,290) (Ref. Nos. 3; 24).

Surface Water Migration Pathway A release of hazardous substances from the SFC site to surface water is not suspected. Runoff from the SFC site is collected by the on-site stormwater drain system, which uses concrete "dry wells" that drain directly to the ground (Ref. No. 42). In addition, no perennial surface water bodies are located within 2 miles of the site (Ref. No. 3). The nearest surface water body is the Carlls River, located approximately 2.5 miles east of the site, which is beyond the limit of evaluation under CERCLA/SARA (Ref. No. 3). The SFC site is not located in a floodplain (Ref. No. 32). Thus, a surface water migration for the SFC site has not been evaluated.

Soil Exposure Pathway Observed soil contamination has been documented at the SFC site. Three surficial soil samples were collected at the site; the following contaminants were detected at levels at least three times greater than the background concentrations or greater than the background sample quantitation limit: toluene, Aroclor-1254, beryllium, cadmium, chromium, cobalt, copper, nickel, silver, zinc, and cyanide (Ref. No. 41, pp. 3-124, 125-130, 157-160, 163-171, 208-213, 217-219, 232, 233, 393-436, 437-439, 457-462, 470-471). This results in an assumed area of 3 square feet of contaminated soil. However, most of the area surrounding the site is paved (Ref. No. 34, p. 4). SFC has not operated since sometime in 1993. Approximately one-third of the SFC building has been leased to a door manufacturer; a total of five employees work on-site for the door manufacturer (Ref. Nos. 5; 26; 28-30; 34, p. 21). There are no schools, residences, or daycare facilities located within 200 feet of the site property (Ref. No. 3). The site is located in an industrial area and surrounded by commercial and manufacturing operations. Some of the employees of these operations could be within 200 feet of the site; however, an exact number is not known. The site is not fenced on the east (Ref. Nos. 2, p. 1; 34, p. 4).

Air Migration Pathway A release of hazardous substances from the SFC site to air has not been observed and is not suspected. No analytical data are available to document a release. During the Phase II investigation conducted by GRB, no readings above background were detected in the ambient air using the HNu photoionization detector (Ref. No. 2, p. 6). No readings above background were reported during air monitoring performed during a recent site inspection (Ref. No.

29). No readings above background were observed using a OVM photoionization detector during the WESTON site reconnaissance in November 1997 (Ref. No. 34, pp. 1-2). The only readings above background using the OVM photoionization detector during the WESTON sampling event in April 1998 were in holes below the concrete floor in the former paint booths and plating area; the maximum reading was 5 units above background (Ref. No. 34, pp. 16-20). Hazardous substances were detected in soil samples at concentrations at least three times higher than the background concentrations at depths over 20 feet bgs, and most of the area surrounding the site is paved (Ref. Nos. 2, pp. 9, 14; 22; 29; 34, p. 4). Approximately 202,120 people live within a 4-mile radius of the site (0 - 0.25 mile: 20; 0.25-0.5 mile: 30; 0.5-1 mile: 2,330; 1-2 miles: 30,490; 2-3 miles: 74,230; and 3-4 miles: 95,020) (Ref. No. 10). Approximately 526 acres of wetlands are located within a 4-mile radius of the site (0-1 mile: 0; 1-2 miles: 9; 2-3 miles: 206; 3-4 miles: 311 acres) (Ref. No. 11). Sensitive environments are also located within 4 miles of the site, including four New York State-listed endangered species habitats, one federal-listed endangered species habitat, and five State-listed threatened species habitats (Ref. No. 33).

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28. Phone Conversation Record: Conversation between Jaime Asher, NYSDEC, and Tonya Balla, WESTON, 10 July 1997.
29. Phone Conversation Record: Conversation between Adley Michael, WESTON-TAT, and Tonya Balla, WESTON, 10 July 1997.
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ATTACHMENT 1

PHOTOGRAPH LOG

SPECTRUM FINISHING CORPORATION

BABYLON, SUFFOLK COUNTY, NEW YORK

ON-SITE RECONNAISSANCE: 21 NOVEMBER 1997

SAMPLING EVENT: 7-8 APRIL 1998

PHOTOGRAPH LOG
SPECTRUM FINISHING CORPORATION
BABYLON, SUFFOLK COUNTY, NEW YORK

On-Site Reconnaissance: 21 November 1997

<u>Photograph Number</u>	<u>Description</u>	<u>Time</u>
1P-1	North side of Spectrum building, facing east.	1245
1P-2	North side of Spectrum building, facing east.	1245
1P-3	East-central storm drain on north side of Spectrum building.	1250
1P-4	North side of Spectrum building, facing west.	1255
1P-5	Central storm drain on north side of Spectrum building.	1255
1P-6	West side of Spectrum building, now occupied by Unique Door Gallery.	1300
1P-7	Alley south of Spectrum building, as viewed from east side of building. Spectrum building is to the left.	1305
1P-8	Buildings to north of Spectrum building, as viewed from east end of Spectrum building.	1305
1P-9	East end (front) of Spectrum building.	1310
1P-10	Alley south of Spectrum building, facing west.	1310
1P-11	Location of monitoring wells MW-4S and MW-4D on south side of building (now occupied by Art Tradition) to south of Spectrum building.	1400
1P-12	Location of monitoring wells MW-3S and MW-3D in front (east side) of Spectrum building.	1415
1P-13	Location of monitoring wells MW-1S and MW-1D on west side of building (most recently occupied by AAA Couriers) to north of Spectrum building.	1430
1P-14	Location of monitoring wells MW-2S and MW-2D, close to auto body shop (Inter Auto) north of Spectrum building.	1435
1P-15	Facing east from north side of Spectrum building. Landfill is	1435

visible in the distance.

- | | | |
|-------|---|------|
| 1P-16 | Location of single monitoring well near body shop,
approximately 50 feet west of location of monitoring wells
MW-2S and MW-2D. | 1440 |
| 1P-18 | Area of stained soil near west end of Spectrum building (outside
area now occupied by Unique Door Gallery) in alley to south
of building. | 1500 |



1P-1

North side of Spectrum building, facing east.

1245



1P-2

North side of Spectrum building, facing east.

1245



1P-3

East-central storm drain on north side of Spectrum building.

1250



1P-4

North side of Spectrum building, facing west.

1255



1P-5

Central storm drain on north side of Spectrum building.

1255



1P-6

West side of Spectrum building, now occupied by Unique Door Gallery.

1300



1P-7

Alley south of Spectrum building, as viewed from east side of building. Spectrum building is to the left.

1305



1P-8

Buildings to north of Spectrum building, as viewed from east end of Spectrum building.

1305



1P-9

East end (front) of Spectrum building.

1310



1P-10

Alley south of Spectrum building, facing west.

1310



1P-11

Location of monitoring wells MW-4S and MW-4D on south side of building (now occupied by Art Tradition) to south of Spectrum building.

1400



1P-12

Location of monitoring wells MW-3S and MW-3D in front (east side) of Spectrum building.

1415



1P-13

Location of monitoring wells MW-1S and MW-1D on west side of building (most recently occupied by AAA Couriers) to north of Spectrum building.



1P-14

Location of monitoring wells MW-2S and MW-2D, close to auto body shop (Inter Auto) north of Spectrum building.

1435



1P-15

Facing east from north side of Spectrum building. Landfill is visible in the distance.

1435



1P-16

Location of single monitoring well near body shop, approximately 50 feet west of location of monitoring wells MW-2S and MW-2D.

1440



1P-18

Area of stained soil near west end of Spectrum building (outside 1500 area now occupied by Unique Door Gallery) in alley to south of building.

PHOTOGRAPH LOG
SPECTRUM FINISHING CORPORATION
BABYLON, SUFFOLK COUNTY, NEW YORK

Sampling Event: 7-8 April 1998

<u>Photograph Number</u>	<u>Description</u>	<u>Time</u>
<i>7 April 1998</i>		
2P-1	Photo of soil sample 22-0132-SS01 location.	0945
2P-2	Photo of C. Guder collecting soil sample 22-0132-SS02.	1005
2P-3	Photo of C. Guder collecting soil sample 22-0132-SS03.	1015
2P-4	Photo of C. Guder, S. Klepacki collecting stormwater/runoff sample 22-0132-SW04.	1100
2P-5	Photo of groundwater sample 22-0132-GW01 location.	1130
2P-6	Photo of groundwater sample 22-0132-GW05 location.	1140
2P-7	Photo of C. Guder collecting stormwater/runoff sample 22-0132-SW03.	1205
2P-8	Photo of soil sample 22-0132-SS09 location.	1220
2P-11	Photo of sediment sample 22-0132-SS10/SS22 location.	1405
2P-12	Photo of groundwater sample 22-0132-GW03 location.	1400
2P-13	Photo of groundwater sample 22-0132-GW07 location.	1410
2P-14	Photo of C. Guder following collection of stormwater/runoff sample 22-0132-SW01.	1445
2P-15	Photo of C. Guder collecting sediment sample 22-0132-SS06.	1540
2P-17	Photo of C. Guder collecting stormwater/runoff sample 22-0132-SW02.	1605
2P-18	Photo of C. Guder collecting sediment sample 22-0132-SS07.	1625
2P-19	Photo of S. Klepacki collecting groundwater sample 22-0132-GW04.	1650
2P-20	Photo of groundwater sample 22-0132-GW08 location.	1700

8 April 1998

2P-21	Photo of T. Varner collecting soil sample 22-0132-SS17. (Note that date on placard is incorrect.)	1010
2P-22	Photo of T. Varner collecting soil sample 22-0132-SS16. (Note that date on placard is incorrect.)	1030
2P-23	Photo of T. Varner collecting soil sample 22-0132-SS11, facing west.	1055
2P-24	Photo of T. Varner at location of soil sample 22-0132-SS05.	1135
2P-26	Photo of T. Varner at location of soil sample 22-0132-SS04.	1055
2P-27	Photo of T. Varner at location of soil sample 22-0132-SS18.	1315
2P-28	Photo of S. Klepacki at location of groundwater sample 22-0132-GW02/GW09.	1325
2P-29	Photo of former wastewater treatment area, facing west.	1410
2P-30	Photo of T. Varner at location of soil sample 22-0132-SS15.	1425
2P-31	Photo of T. Varner at location of background soil sample 22-0132-SS19.	1450
2P-32	Photo of T. Varner at location of background soil sample 22-0132-SS20.	1510



2P-1

Photo of soil sample 22-0132-SS01 location.

0945



2P-2

Photo of C. Guder collecting soil sample 22-0132-SS02.

1005



2P-3

Photo of C. Guder collecting soil sample
22-0132-SS03.

1015



2P-4

Photo of C. Guder, S. Klepacki collecting stormwater/runoff
sample 22-0132-SW04.

1100



2P-5

Photo of groundwater sample 22-0132-GW01 location.

1130



2P-6

Photo of groundwater sample 22-0132-GW05 location.

1140



2P-7

Photo of C. Guder collecting stormwater/runoff
sample 22-0132-SW03.

1205



2P-8

Photo of soil sample 22-0132-SS09 location.

1220



2P-11

Photo of sediment sample 22-0132-SS10/SS22 location.
sample 22-0132-SW04.

1405



2P-12

Photo of groundwater sample 22-0132-GW03 location.

1400



2P-13

Photo of groundwater sample 22-0132-GW07 location.

1410



2P-14

Photo of C. Guder following collection of stormwater/runoff sample 22-0132-SW01.

1445



2P-15

Photo of C. Guder collecting sediment sample 22-0132-SS06.

1540



2P-17

Photo of C. Guder collecting stormwater/runoff
sample 22-0132-SW02.

1605



2P-18

Photo of C. Guder collecting sediment sample 22-0132-SS07.

1625



2P-19

Photo of S. Klepacki collecting groundwater sample
22-0132-GW04.

1650



2P-20

Photo of groundwater sample 22-0132-GW08 location.

1700



8 April 1998

2P-21

Photo of T. Varner collecting soil sample 22-0132-SS17.
(Note that date on placard is incorrect.)

1010



2P-22

Photo of T. Varner collecting soil sample 22-0132-SS16.
(Note that date on placard is incorrect.)

1030



2P-23

Photo of T. Varner collecting soil sample 22-0132-SS11,
facing west.

1055



2P-24

Photo of T. Varner at location of soil sample 22-0132-SS05.

1135



2P-26

Photo of T. Varner at location of soil sample 22-0132-SS04.

1055



2P-27

Photo of T. Varner at location of soil sample 22-0132-SS18.

1315



2P-29

Photo of former wastewater treatment area, facing west.

1410



2P-28

Photo of S. Klepacki at location of groundwater sample
22-0132-GW02/GW09.

1325



2P-30

Photo of T. Varner at location of soil sample 22-0132-SS15.

1425



2P-31

Photo of T. Varner at location of background soil sample 22-0132-SS19.

1450



2P-32

Photo of T. Varner at location of background soil sample
22-0132-SS20.

1510

REFERENCE NO. 1

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FILE COPY

**ENGINEERING INVESTIGATIONS
AT
INACTIVE HAZARDOUS WASTE SITES
IN THE
STATE OF NEW YORK**

PHASE I - PRELIMINARY INVESTIGATION

FINAL REPORT

SPECTRUM FINISHING CORPORATION SITE

**CONTRACT NO. D000452
NYSDEC SITE NO. 152029**

**Submitted To:
Division of Solid Waste
New York State
Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-0001**

**Submitted By:
Woodward-Clyde Consultants, Inc.
1250 Broadway, 15th Floor
New York, New York 10001**

September 20, 1984

82C4548

I.0
SITE DESCRIPTION

Spectrum Finishing Corp. is located at 50 Dale Street in West Babylon, New York (Figure 1). The site is located in southwestern Suffolk County, approximately 2½ miles east of the Nassau County line.

The site vicinity is characterized as relatively flat with an average ground slope of less than 1%. The area is entirely developed and paved with surface run-off confined to storm sewers. Spectrum Finishing Corp. occupies a one story building in a heavily industrialized area. Numerous commercial and manufacturing facilities surround the site. Large cemeteries are located to the north, south, and west of the site while the Babylon landfill is located approximately ¼ mile to the east.

Spectrum Finishing Corp. presently consists of a 700 square foot building containing electroplating, treatment, office, and drum storage facilities. Surrounding the building are on-site drum storage, parking, underground leaching tanks and a storm drain. At the time of the WCC site survey (April, 1983) Spectrum Finishing Corp. was an active electroplating facility engaged in the application of plating high strength alloys for the aerospace industry. Electroplating of copper, cadmium, chromium, and nickel are performed as well as descaling of titanium alloys (Jacobsen, 1968).

3.0
SITE HISTORY

The Spectrum Finishing Corp. has operated on the site since at least 1968 to the present (WCC, 1983). The facility is currently operated by William DeChirico, Vice President of Spectrum Finishing Corp.

From 1970 to 1975 site inspections and sampling by the SCDHS revealed discharges of hazardous wastes into storm drains and leaks from holding tanks (chronology and history of Spectrum Finishing Corp., undated, in Appendix B). High concentrations of heavy metals (iron, copper, cadmium, nickel, and chromium) were noted from samples taken from the leaching tank, storm drain, and site runoff (SCDHS, 1970; 1974; 1975). An Order on Consent was issued in May 1975 to seal all outside tanks to prevent any further leakage (NYSDEC, 1975c). A second Order on Consent was issued in December 1981 to : 1) stop discharges of hazardous substance to the ground water, 2) obtain all necessary permits, and 3) move toxic waste storage indoors (SPDHS, 1981).

High concentration of heavy metals were still being observed in early 1982 (SCHDS, 1982b). In June 1982, a Finding of Fact, Recommendation, Decision and Order was issued to the Spectrum Finishing Corp. in violation of Article 12 of the Suffolk County Sanitary Code. The SCDHS recommended that: 1) the storm drain be abandoned, 2) drain covers be installed and 3) necessary permits be applied for (SCDHS, 1982).

As recently as May 1983, high concentrations of toluene and 2-Butanone (MEK) have been sampled from the sanitary pool on the north side of the existing building (SCDHS 1983a; 1983b).

Currently waste acid solutions are being stored in 55 gallon polypropylene containers inside the building and picked up periodically by an industrial waste scavenger (Donnelly Engineering, 1982).

4.0
SITE DATA

4.1 Site Area Surface Features

The site of the Spectrum Finishing Corp. is located in a generally flat area with an average, ground surface slope of less than 3%.

There are no surface water features in the vicinity of the site. The area surrounding the site is paved and surface run-off is via existing storm drains.

The predominant land use in the area is industrial. The site is surrounded by existing manufacturing and commercial facilities. The Babylon landfill is located approximately $\frac{1}{4}$ mile east of the site. Cemeteries are located north, west, and south of the site vicinity.

4.2 Site Hydrogeology

4.2.1 Ground Water Occurrence. Ground water in the site area occurs in unconsolidated sediments of Pleistocene and Cretaceous age. These deposits are approximately 1400 feet thick and overlie Precambrian crystalline bedrock (Taney, 1961; Jensen and Soren, 1974). The low hydraulic conductivity bedrock is considered to be the bottom of the ground water reservoir (Jensen and Soren, 1974).

The site area is directly underlain by glacial outwash deposits consisting of coarse sand and gravel. These deposits comprise the upper glacial aquifer and were approximately 74 feet thick at the Babylon landfill just

east of the site (Kimmel and Braids, 1980). Ground water in the upper glacial aquifer occurs at an elevation of 47 feet above MSL which translates to approximately 16 feet below the ground surface at the site (Kimmel and Braids, 1980). The water table has a hydraulic gradient of 8 feet per mile (Kimmel and Braids, 1980) in a southeasterly direction.

Underlying the upper glacial aquifer is the Gardiners Clay. This deposit is approximately 10 feet thick under the site area and acts as a barrier to the vertical movement of water because of its low hydraulic conductivity (Kimmel and Braids, 1980).

The second major water bearing unit underlying the site area is the Cretaceous Magothy Formation. The Magothy aquifer is a major aquifer throughout most of Long Island and is hydraulically linked to the upper glacial aquifer. The Magothy aquifer consists of predominantly fine to coarse sand interbedded with clay, silt and lignite. It is believed to be approximately 800 feet thick in the site area (Taney, 1961; Jensen and Soren, 1974).

The Magothy aquifer directly overlies the clay member of the Cretaceous Raritan Formation. The clay in turn overlies and confines the Lloyd Sand member of the Raritan Formation, which constitutes the deep confined aquifer in the site area (Taney, 1961; Jensen and Soren, 1974). The Lloyd Sand consists of stratified beds of sand, gravel, silt and clay.

Underlying the members of the Raritan Formation is crystalline bedrock of Precambrian age. The bedrock surface dips approximately 60 feet per mile to the southeast, as do the overlying Cretaceous formations (Taney, 1961; Franke and McClymonds, 1982).

4.2.2 Ground Water Quality. Ground water quality in Suffolk County is generally good, typically containing less than 100 ppm dissolved solids (51 mg/l in the vicinity of the Babylon landfill). Local contamination by domestic waste, industrial

waste, and road salt has caused some alteration of the regional quality of the ground water (Kimmel and Braids, 1980).

Water quality samples from the Babylon landfill show that the water in the upper glacial aquifer has been contaminated by domestic waste with high concentrations of ammonia, nitrate, calcium, sodium, sulfate, and chloride (Kimmel and Braids, 1980).

A plume of leachate-enriched water emanating south eastward from the Babylon landfill has been delineated on the basis of specific conductance. Specific conductance ranges between 1,000 and 2,000 micromhos (umho) throughout the plume; however values between 200 and 400 umho have been measured in wells outside the boundary of the plume in the vicinity of the site area (Kimmel and Braids, 1980).

4.3 Past Sampling and Analysis

Past sampling and analysis at the site has been confined to samples of the waste collected from a storage tank, storm drain, sanitary pool, and surface puddle. All available analytical results are included in Appendix B.

Sampling and water quality analysis from existing wells in the vicinity of the site has been conducted for a study of the leachate plume from the Babylon landfill (Kimmel and Braids, 1980).

There has been no reported soil or air quality sampling for the site area.

6.0

WORK PLAN

6.1 Objectives

Because there has been no reported previous sampling of ground water and soils at the site, the objective of this proposed work plan is to collect essential field information required to adequately prepare a final HRS Score and recommendations for remedial action. For this site, the work plan will primarily address questions concerning ground water flow and quality and extent of the soil contamination.

6.2 Field Investigation Plan

6.2.1 Geophysical Studies. A geophysical survey utilizing the terrain conductivity technique will be performed at the site. This technique may be utilized to locate subsurface plumes resulting from leakage of the underground tanks. For this purpose, measurements will be taken around the site vicinity especially in the south and east direction which is downgradient of the facility. Ground water flow is assumed to be in a southeasterly direction. Furthermore, these measurements could help identify anomalous conductivity distributions that may indicate buried metallic objects such as tanks and pipes. The data will be plotted on maps and contoured. These contour maps will provide the basis for defining the number and location of ground water monitoring wells.

It is anticipated that a two person team will require two days to perform the conductivity survey, with readings taken for exploration depths of approximately 25 feet.

6.2.2 Monitoring Wells

6.2.2.1 Installation. Monitoring wells will be installed to provide data pertinent to both water chemistry and characterization of the stratigraphy and ground water regime at the site. It is recommended that three monitoring wells be installed, at the approximate locations shown in Figure 2. Finalized well locations will be determined after the geophysical data has been plotted and reduced. These locations will depend also on the utility search in order to avoid underground obstacles and on accessibility behind the plant building.

One well (MW-1) will be installed at a presumed upgradient location, on the north side of the site. This well will provide background data on the ground water flowing into the area.

Two monitoring wells will be required to monitor downgradient flow directions and water quality. Wells MW-2 and MW-3 will be installed at the approximate locations shown in Figure 2. These two locations will provide a opportunity for interception of any contaminant plume, from the wastes which have leaked from underground storage tanks.

All monitoring wells will be installed so as to sample the upper 10 feet of ground water. It is assumed that the ground water table will be within 20 feet of the ground surface and that total well depth will not exceed 30 feet.

Borings will be advanced through the overburden by 6-inch I.D. hollow stem augers or driven casing, with continuous split spoon sampling through the upper 15 feet of soil, and at 5-foot intervals below 15 feet. Soil samples will be classified in the field by a hydrogeologist. Selected samples will be sent to our geotechnical laboratory for grain size analysis and Atterberg Limits testing. To maximize information on any volatile organic contaminants, headspace analyses

will be conducted on soil samples, using a portable gas chromatograph. These data will be used to evaluate relative concentrations of organic contaminants in various stratigraphic horizons.

Slotted 3-inch I.D. PVC well screen will be installed over 10-foot intervals in each well, with a riser of flush joint, threaded, 3-inch I.D. PVC pipe. Where necessary, risers will extend at least 3 feet above the ground surface to prevent contamination by surface water flooding. A gravel pack will be completed to approximately 2 feet above the top of the screen, where a 1-foot bentonite seal will be installed. To further assure that water samples will be representative of the screened interval, the remaining annular space will be grouted, and a protective steel casing will be installed. After installation, the wells will be developed by pumping, to remove any fine grained material.

It is estimated that 8 days will be required to conduct drilling and well installation operations at the site. This time also includes surveying of well elevations, organic vapor analysis, and slug-type permeability testing.

6.2.2.2 Water Elevations. Ground water depths will be measured at the time of well development and again at the time of pumping. Relative well elevations will be surveyed by WCC personnel. Water elevations will be plotted and used to develop contours of the ground water table at the site. Based on this map, the direction(s) of ground water flow will be calculated.

Flow and gradient data will be fundamentally input in quantifying site conditions and will be assessed together with plume geometries (if any) inferred from geophysical survey data.

6.2.2.3 Aquifer Testing. "Slug"-type permeability tests will be conducted in each newly installed well to evaluate the permeability of materials spanning the screened interval. The method is a rapid means by which the in-situ permeability in the immediate vicinity of a monitoring well can be approximated.

The test does not involve pumping of potentially contaminated water, and results generally suffice for ground water flow analysis.

6.2.3 Sampling and Analysis Plan

6.2.3.1 General Plan. Sampling and analysis plan to be supplied by NYSDEC.

6.2.3.2 Sampling Parameters. Previous sampling at the site is limited to the waste materials at the surface. Therefore, the laboratory analysis will focus on chemical screening techniques to determine the range of concentration and the migration of contamination in ground water and contamination of subsurface soils. Sampling parameters will cover a variety of contaminants, including heavy metals, volatile and non-volatile organics. In addition, air quality will be assessed to determine whether volatile organics are being released from the site towards adjacent residential areas. A portable HNU analyzer or an Organic Vapor Analyzer (OVA) will be used to conduct this survey. Sample types and chemical parameters are summarized in Table 6-1.

It is estimated that 2 days will be required to conduct the field sampling of ground water and air monitoring.

6.2.3.3 Sampling Locations. One water sample and one soil sample from each of the three ground water monitoring wells will be analyzed. Results of each pair of analyses will be compared to evaluate any downward migration of contaminants through soil. Ground water analyses will be evaluated in terms of other hydrogeologic data to evaluate the presence, distribution, and migration directions of any ground water contaminant plumes. Air quality will be assessed in upwind and downwind locations.

6.3 Health and Safety Plan

Health and Safety Plan to be supplied by NYSDEC.

REFERENCE NO. 2

**ENGINEERING INVESTIGATIONS AT
INACTIVE HAZARDOUS WASTE SITES IN THE
STATE OF NEW YORK**

PHASE II INVESTIGATION

**SPECTRUM FINISHING CORPORATION
WEST BABYLON, SUFFOLK COUNTY, NEW YORK**

SITE CODE: 152029

DRAFT REPORT



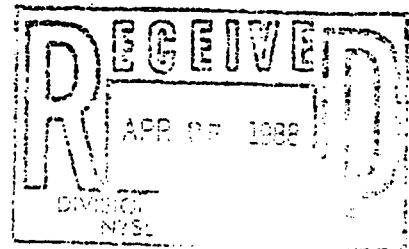
PREPARED FOR:

**NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 WOLF ROAD, ALBANY, NEW YORK**

DIVISION OF SOLID AND HAZARDOUS WASTE

**PREPARED BY:
GRB ENVIRONMENTAL SERVICES, INC.
AND
RICHARD D. GALLI, P.C.**

MARCH, 1988



o) Ku, Henry and Simmons, Dale, 1986, "Effect of Urban Stormwater Runoff on Ground Water Beneath Recharge Basins on Long Island, New York", USGS, Water-Resources Investigations Report 85-4088.

p) Soil Survey of Suffolk County, New York

q) Soren, J., 1978, "Subsurface Geology and Paleogeography of Queens County, Long Island, N.Y.," USGS Open File Report WRI 77-34 (in Coop. with NYSDEC).

3.2 Geophysical Survey

On January 16, 1987 a magnetometer and resistivity survey were performed. The magnetometer survey was performed in the areas where the wells were to be drilled to identify any buried utilities. At the completion of the magnetometer survey, a resistivity survey was performed. Two transects were surveyed, one on the east end and another on the west end of the property. Only a small patch of grass existed at these locations. However, overhead electrical wires and other interferences (i.e., pavement and buildings) inhibited the survey results. The northern and southern areas of the site were paved, contained buildings, metal fences and overhead electrical wires. No survey was made at those locations (See Appendix A for report).

3.3 Geotechnical Field Investigation

From January 21 to January 28, 1987 eight monitoring wells were installed at 4 well nest locations by Empire Soils Investigations, Inc. under the supervision of a qualified geologist and in the presence of NYSDEC Region 1 personnel (Mr. Christopher McGee and Mr. Alexander Moskie). All wells were drilled utilizing a 6 1/4 inch hollow stem auger. The augers were advanced five feet at a time with a plug at the bottom preventing any soil from entering the hollow stem. At the completion of each five foot advancement, a 24 inch split spoon sample was taken. The spoon was driven with a 140 pound hammer having a free fall of 30 inches. Upon opening the split spoon, HNu readings were taken, sample recovery measured, and the sample classified utilizing the Unified Soil

Classification System. After classification, the sample was placed in a glass jar, labeled and sealed. All downhole equipment was steam cleaned prior to entry or re-entry into each borehole. At the completion of drilling, each well was developed. (See appendix B for boring logs). A discussion of site stratigraphy is presented in section 5.2.2.

3.4 Groundwater Sampling

On April 30 and May 1, 1987 groundwater samples were collected from each monitoring well in the presence of NYSDEC Region 1 personnel (Mr. Christopher McGee). Prior to sampling, 3 volumes of water were evacuated. At the completion of bailing, the wells were sampled. Dedicated bailers and rope were utilized for each well. Each bailer was decontaminated prior to use. Decontamination consisted of non-phosphate soap wash, rinse with clean tap water, an alcohol rinse, followed by a rinse with distilled water. Each bailer was then placed in plastic bag and sealed. The seal was not opened until just before sampling. Chain of custody sheets were filled out for each sample collected. All samples were stored in glass jars with screw caps and placed in ice chests. All samples were delivered to N.Y. Testing Laboratories located in Westbury, N.Y., the same day (See Appendix C for Chain of custody sheets and field notes and Attachments 1 through 4 for results).

3.5 Well Survey

On June 13, 1987 the wells were surveyed by Harold R. Bausch, P.C., a New York State Licensed Surveyor, to the nearest 0.01 foot (See Appendix D for results).

3.6 Laboratory Analysis

New York Testing Laboratories performed analysis on 8 groundwater and 10 soil samples utilizing EPA methods and guidelines in accordance to CLP protocols and deliverables. All laboratory holding times were met.⁷ The results are presented in Attachments 1 through 4 and summary tables are found in Section 5.0. A discussion of the results is given in Sections 5.2.4 (soil) and 5.2.6 (water).

3.7 Groundwater Elevation Measurements

Groundwater elevation measurements were performed on June 13, July 29 and November 11, 1987 utilizing a measuring tape equipped with a hollow weight at the end. Measurements were taken and recorded to the nearest 0.01 foot (See Appendix E for Data Sheets). A discussion of the results is presented in Section 5.2.5.

3.8 Industrial Park Survey

On June 29, 1987 a drive through survey of nearby industries was performed in an effort to characterize the area. A discussion of the survey is presented in section 5.1.8.

4.0 SITE HISTORY

The Spectrum Finishing Corporation has operated on the site since at least 1968 to the present. The facility is currently operated by William DeChirico, Vice- President of Spectrum Finishing.

From 1970 to 1975 site inspections and sampling by the Suffolk County Department of Health Services revealed discharges of industrial wastes into storm drains and leaks from holding tanks. High concentrations of heavy metals (iron, copper, cadmium, nickel, and chromium) were noted from samples taken from the leaching tank, storm drain, and site runoff (SCDHS, 1970, 1974, and 1975). An Order on Consent was issued in May 1975 to seal all outside tanks to prevent any further leakage. A second Order on Consent was issued in December 1981 to 1) stop discharges of hazardous substances to groundwater, 2) obtain all necessary permits and, 3) move toxic waste storage indoors.

Concentrations of heavy metals were observed in early 1982 by SCHDS. In June of 1982, a Finding of Fact, Recommendation, Decision and Order was issued to Spectrum Finishing in Violation of Article 12 of the Suffolk County Sanitary Code. The SCHDS recommended that 1) the storm drain be abandoned, 2) drain covers be installed, and 3) necessary permits be applied for.

Since 1983 Spectrum Finishing Corporation has ceased the discharge of any of its plating rinsewaters to groundwaters in accordance with its former State Pollutant Discharge Elimination System permit. Further, Spectrum sealed one of the storm drains to prevent any further spills from discharging directly into groundwater. Currently, Spectrum Finishing is storing and hauling all its plating rinsewaters to an approved TSD facility by a licensed hauler.

4.1 Current Operations

The plating facilities at the site are designed for the applications of precision aerospace finishes to high strength alloys. The installation itself is small, occupying approximately 3,000 square feet.

The facility performs three basic operations: Plating, Conversion Coating, and Cleaning. Steel alloys are plated either with nickel, copper or cadmium metals; aluminum parts receive a chromate conversion coating; and titanium alloys are descaled and cleaned chemically.

Estimated water requirements for the total facility are 1,500 to 2,000 gallons per week of deionized water. The water system itself is closed. The water is recirculated through a deionizer unit and returns to the processing tank. Estimated loss due to evaporation is 10%. Effluent volume is estimated to be less than 400 gallons per day. This effluent comes from solutions used to recharge exchange resins and solutions necessary in the waste treatment and destruction of waste products.

Domestic water is introduced into the system by direct discharge to the collecting sump where it is deionized along with the process waste and pumped to the process as rinse or make-up water. Approximately 200 gallons of recharge water is introduced.

The recharged water from the deionizer is retained in a 40 gallon holding compartment in the rear of the deionizing unit. The pH of the recharge water is brought to 2.5 by addition of sulfuric acid and with air agitation. Sodium meta bisulfite is added and agitated until the indicator test shows that chromates have been reduced. Caustic soda is then added to bring the pH up to 8.5 to facilitate the precipitation of the chrome plus other heavy metals. Cyanide is destroyed by chlorination. All wastewaters are then hauled away for disposal at a licensed TSDF. The sludge from the bottom of the tanks are collected and stored in 55 gallon polypropylene drums within the wet area, manifested, and transported by a licensed hauler to a licensed disposal facility.

4.2 Site Permits

In response to regulatory requests, Spectrum Finishing has been aggressively pursuing engineering studies to meet the requirements and obtain all necessary permits for the facility. To this end, Spectrum Finishing has recently received

an Article 12 permit from SCDHS. In June 1985, Spectrum Finishing Corporation constructed an indoor storage facility (containment system) for its hazardous/toxic substances, wastes and process solutions in accordance with Suffolk County's Sanitary Code, Article 12 - Construction of an Indoor-Outdoor Storage Facility for Hazardous/Toxic Materials.

Spectrum Finishing submitted detailed plans for construction of berms and curbs to provide secondary containment of its plating solutions, rinsewaters, hazardous substances and wastes, solvents, paints, etc. The Suffolk County Department of Health Services had approved construction of the containment system after review of engineering drawings, as well as the chemical resistant coating system which was applied to floors and walls. This system was constructed so that spills, leaks or wastewater products stored will not permeate, drain, infiltrate or otherwise escape to the local groundwaters before cleanup occurs. Their system consists of curbs, sumps, dikes and a coating system. This coating system was installed to ensure that the secondary containment system was made permanently impervious to the types of products/materials stored within this area.

The secondary containment system was constructed of reinforced concrete and provides a volume of 110 percent of the total tank volumes.

Other permits which Spectrum Finishing Corporation has obtained include an Air Permit (Certificate to Operate) from the NYSDEC and an New York State DEC Generator Permit.

Aquifer from the landfill is approximately 27,547,854 gallons per year or 75,473 gallons per day. This estimate is based on an annual rainfall of 43.4 inches, mean annual lake evaporation of 30 inches, net precipitation of 13.4 inches, and the size of the landfill being 68 acres. An extensive groundwater contamination plume has been characterized from the landfill and is 1,900 feet wide, near the landfill, and 10,000 feet long (Kimmel and Braids, 1980)

North, west and south of the site are large cemeteries (N.Y. Montefiore and Pinelawn to the south, St. Charles to the west, and Wellwood, Beth-Moses, Pinelawn, and U.S. National Cemeteries to the north). Lawn maintenance activities are likely to include the use of nitrates for fertilizers and herbicides to control weeds.

5.2 SITE ASSESSMENT

In order to perform a site specific assessment, the following activities were performed:

- o On January 16, 1987 a geophysical survey was conducted.
- o From January 21 to January 28, 1987 four 6 inch boreholes were augered down to 50 feet. Split spoon samples were taken every five feet from the surface to the bottom of the boreholes under the continuous supervision of qualified geologists. Boring logs were prepared for each borehole and soil samples were described utilizing the unified soil classification system.
- o On April 30 and May 1, 1987 groundwater samples were collected and shipped to N.Y. Testing Labs.
- o Site wells were surveyed
- o Three rounds of groundwater elevations were collected

The following paragraphs discuss the results of the above activities.

5.2.1 Site Topography

Spectrum Finishing Corporation is located in the center of a well established industrial park. Surrounding the industrial park are cemeteries to the south, west and north. To the east is the Babylon Landfill. The site is situated on a glacial outwash plain which gently slopes southward from the moraines to the north at a slope of about 20 feet per mile. The site itself is characterized by flat topography having a slope of less than 3 percent.

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5.2.2 Site Stratigraphy

The upper 10 to 15 feet of unconsolidated sediments consists of mixtures of fine to coarse sand with traces of silt and fine gravel. Based on the boring logs and geologic cross-sections, this upper layer dips to the south five feet over approximately 150 feet between wells MW-2 and MW-3 (see Figure 5-1). The top 4 inches in the vicinity of MW-3 is top soil consisting of grass and roots. In the vicinity of MW-4, coarser material (gravel) is more abundant as compared to MW-3 and MW-2. However, from 10 to 15 feet sand size particles become more predominant.

From 10 to 50 feet along the west-east transect (MW-1 and MW-2, see Figure 5-2), mixtures of fine to coarse gravel and coarse sand with traces of silt predominate. This coarser layer begins at 15 feet at MW-3 and MW-4. The thickness of this layer varies from 40 feet (at MW-1 and 2) to 35 feet (at MW-3 and 4).

The overburden grades back to mixtures of sand with traces of silt and fine gravel at 50 feet at wells MW-1, 2, and 4. In general, the overburden consists of varying amounts of sand and gravel with traces of silt.

5.2.3 Site Soils

Site soils consist of Urban Land (Ur) and Haven Loam (HaA) according to the Soil Survey of Suffolk County, New York (Map No. 84). Greater than 90 percent of the site contains the Urban land soil type and the remaining the Haven loam. Urban land consists of areas covered by buildings and parking lots. Those areas of the site which are not paved consist of the Haven loam, 0 to 2 percent slope. This soil is nearly level and found on outwash plains. The Haven series consists of deep, well drained, medium textured soils that formed a loamy or silty mantle over stratified coarse sand and gravel.

5.2.4 Soil Quality

Ten soil samples were collected and analyzed for the following chemical parameters; pH, specific conductance, chlorides, cyanide, cadmium, chromium, copper, iron, lead, nickel, zinc, 2-butanone, 1,1-dichloroethane, 1,1,1-trichloroethane, trichloroethylene, trans-1,2-dichloroethane and toluene. Table 5-5 presents a summary. No volatile organics were detected in the samples. Soil pH was slightly acidic varying from 4.55 to 6.45. All heavy metals tested for were found in background and side gradient boreholes (MW-1 and MW-2). The maximum concentration of copper (30 mg/l in MW-2, SS-5), iron (6,951 mg/l in MW-1, SS-1), lead (27.4 mg/l in MW-1, SS-1) and zinc (36.1 mg/l in MW-1, SS-1) were found in MW-1 and MW-2 boreholes. Chromium concentration of 29.8 mg/l at MW-3, SS-5, is 3 times greater than the highest concentration of chromium found in the background soil samples. Cadmium concentrations were found in four of the 10 samples, ranging from 0.915 to 2.0 mg/l. The background concentration was found to be 1.27 mg/l. Nickel was found in 3 of the 10 soil samples, varying from 3.95 (background) to 5.25 mg/l. These types of metals in site soils are typical of industrial areas.

USGS Water-Resources Investigations Report 85-4088 (Effect of Urban Stormwater Runoff on Ground Water Beneath Recharge Basins on Long Island, N.Y.) found various concentrations of cadmium, chromium, copper, iron, lead, manganese, and zinc in basin soils. Iron, manganese and zinc are native to Long Island soils.

5.2.5 Site Hydrology

Three rounds of groundwater elevation measurements were taken (June 13, July 29, and November 14, 1987). Groundwater contour elevation maps were prepared from the results and are graphically presented on Figures 5-3, 5-4 and 5-5. Depth to groundwater varied from 16.72 (MW-4 on 6/13/87) to 21.18 feet (MW-2 on 11/14/87). Groundwater fluctuation over the study period were basically equal in each well and were 3.38 feet for MW-1 S,D, 3.38 feet for MW-2 S,D, 3.35 feet for MW-3 S,D and 3.37 feet for MW-4 S,D. Based on the groundwater contours in Figures 5-3 through 5-5, site groundwater is flowing essentially southeast. Therefore, site groundwater flow corresponds to the regional flow patterns. The groundwater gradient at the site is approximately 0.002 percent. This is based on a 0.57 feet fall in groundwater elevation over 300 feet.

$$= .00002 ? \quad \frac{.57}{300} = 0.0019$$

The aquifer directly below the site is known as the Upper Glacial Aquifer. This aquifer is regional in extent and is the aquifer of concern. Permeability of the aquifer of concern has been reported to be 9.5×10^{-2} cm/sec by Soren (1971). This estimate is within the permeability range of stratified sands and gravels (10^{-3} to 10^{-1}) as reported by Fetter (Applied Hydrogeology, pg. 75, 1983).

5.2.6 Groundwater Quality

One round of groundwater samples were collected under the supervision of Region 1 NYSDEC. Well MW-1 represents background, MW-2 side gradient, MW-3 and MW-4 as downgradient wells. The following chemicals were analyzed for : Cadmium, chromium, copper, iron, lead, nickel, zinc, pH, specific conductance, chloride, cyanide, 1,1-dichloroethane, 1,2-dichloroethane, 2-butanone, 1,1,1-trichloroethane, trichloroethylene, and toluene. These chemicals were chosen because they represent the chemicals utilized at the site and were reviewed and approved by the NYSDEC and were incorporated into the Order On Consent. The results are summarized in Tables 5-6 and 5-7 and are discussed below.

Heavy Metals

The maximum concentration of cadmium (99 ug/l) was found in MW-4 S well, which is downgradient from the site. This concentration is a little more than twice as high as the concentration (45 ug/l) of cadmium found in well MW-2D. The background well (MW-1) had a concentration of < 3 ug/l. The concentration of cadmium appears to decrease northward (upgradient from the downgradient wells). A possible explanation could be that at one time in the past a spill may have occurred and a "slug" is migrating southeastward, or that a local recent spill occurred in the immediate area of well MW-4. The rationale for the latter is that MW-4D well has a concentration of only 6 ug/l, indicating that, possibly, the metal has not had enough time to migrate downward. Out of 24 private wells sampled in West Babylon by the Suffolk County Department of Health Services in 1984 and tested for cadmium, none were found to contain cadmium. The drinking water standard for cadmium is 10 ug/l.

Chromium concentrations varied from 10 ug/l (MW-1D) to 36 ug/l (MW-3S). In all cases, maximum chromium concentrations were found in the shallow wells. Drinking water standard for chromium is 50 ug/l. Therefore, chromium concentration at the site were found to be less than the USEPA drinking water standard.

Copper concentrations varied from 15 ug/l (MW-1D) to 926 ug/l (MW-2S). The concentration found at MW-2S is six times greater than the next highest concentration found at MW-4S (147 ug/l) and seven times greater than MW-3S (139 ug/l). This suggests that a spill may have occurred in the past in the vicinity of MW-2 and that a slug has migrated in a southeastward direction. The allowable USEPA drinking water concentration for copper is 1,000 ug/l. Therefore, copper concentrations found at the site are below the USEPA guidelines. The average concentration of copper found in 186 private wells in West Babylon by the Suffolk County Department of Health Services was 400 ug/l, with a maximum concentration of 5,700 ug/l.

Iron concentrations varied from <10 ug/l to 95 ug/l. The maximum concentration of iron is three times less than the USEPA drinking water

standard of 300 ug/l. The concentrations of iron found at the site is not surprising because iron is native to Long Island groundwaters. The higher concentrations may be a result of groundwater pH which was found to be as low as 4.96 at the site. The lower pH values can leach iron from site soils which naturally contain iron. The average iron concentrations of iron found in 186 private wells in West Babylon by the Suffolk County Department of Health Services was 900 ug/l.

Only two samples collected were found to contain lead, MW-2D (29 ug/l) and MW-3D (40 ug/l), all other samples were found to be < 1 ug/l. The drinking water standard for lead is 50 ug/l. Therefore, lead concentrations found at the site are within the drinking water standards and do not violate current regulations. Out of 25 private wells sampled in West Babylon and tested for lead by the Suffolk County Department of Health Services, none were found to contain lead. WR

Nickel was found in only one well, MW-2S, at a concentration of 28 ug/l. Concentrations of nickel at all other wells were found to be < 15 ug/l.

Concentrations of zinc varied from 40 ug/l(MW-1D) to 339 ug/l(MW-3D). The allowable concentration of zinc for drinking water is set at 5,000 ug/l by the USEPA. Therefore, zinc concentrations found at the site are below the USEPA drinking water standard. The average concentration of zinc found in 186 private wells in West Babylon by the Suffolk County Department of Health Services was 1,200 ug/l.

Concentrations of cyanide were found to be <0.01 mg/l at all wells sampled.

Volatile Organics

Half of the volatile organic chemicals required to be analyzed for in the Consent Order were found to be below detection limits. These chemicals include 1,1-dichloroethane (<5 ug/l), 1,2-dichloroethane (<5 ug/l), and 2-butanone (<10 ug/l). The three volatile organic chemicals found at the site include 1,1,1-trichloroethane (5 to 28 ug/l), trichloroethene (2 to 73 ug/l), and

toluene (2 to 5 ug/l). The maximum concentrations of 1,1,1-trichloroethane (28 ug/l) and trichloroethene (73ug/l) were found in well MW-4D which is downgradient from the site. In the case of 1,1,1-trichloroethane, the next highest concentration was found at MW-1S to be 26 ug/l. Well MW-1S is a background well. The average concentration of 1,1,1-trichloroethane found in 197 West Babylon (site location) private wells was 596.6 ug/l by the Suffolk County Department of Health Services (Report of Water Supply Priorities, April 1984).

The maximum concentration of toluene (5 ug/l) was found in wells MW-1S and MW-2D. Again well MW-1S is a background well. The average concentration of toluene found in 66 private wells in West Babylon was found to be 6 ug/l by the Suffolk County Department of Health Services (Report on Water Supply Priorities, April 1984). The maximum concentration found in their survey was 9 ug/l.

The results of the Suffolk County Department of Health Services groundwater quality analytical survey of private wells (published in April 1984, "Report on Water Supply Priorities") indicates that heavy metal and volatile organic compounds are found in various concentrations throughout Suffolk County. In the case of the West Babylon area (location of the site), concentrations of certain metals and volatile organics are higher than those found at the site.

TABLE 5-5
SUMMARY OF SOIL QUALITY

SOIL SAMPLE NUMBER CHEMICAL PARAMETER	CONCENTRATIONS (ug/l, unless noted differently)									
	MW-1 SS-1	MW-1 SS-11	MW-1 SS-5	MW-2 SS-5	MW-2 SS-11	MW-3 SS-1	MW-3 SS-5	MW-3 SS-11	MW-4 SS-5	MW-4 SS-11
pH	6.03	6.45	5.83	4.55	6.02	5.65	6.15	5.44	5.73	5.76
Specific Conductance	119	36	21	104	18	146	32	19	20	18
Chloride (mg/l)	73	15	14	19	11	18	15	15	26	28
Cyanide (mg/l)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cadmium (mg/l)	1.27	< 0.003	< 0.003	< 0.003	< 0.003	2.0	0.915	< 0.003	1.36	0.811
Chromium (mg/l)	9.04	2.98	3.71	4.67	3.56	17.5	29.8	4.33	3.63	6.14
Copper (mg/l)	5.73	< 0.010	1.31	30	1.58	10.5	2.74	< 0.01	8.28	12.0
Iron (mg/l)	6,951	1,670	2,220	1,155	1,654	6,356	1,986	1,612	1,428	2,890
Lead (mg/l)	27.4	< 0.001	< 0.001	12.2	< 0.001	11.5	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (mg/l)	3.95	< 0.015	< 0.015	< 0.015	< 0.015	5.25	< 0.015	< 0.015	4.08	< 0.015
Zinc (mg/l)	36.1	5.22	7.83	5.52	6.09	32.5	7.32	6.63	6.69	17.4
2-Butanone	ND (< 10)	ND (< 10)	ND (< 10)	ND (< 10)	ND (< 10)	ND (< 10)	ND (< 10)	ND (< 10)	ND (< 10)	ND (< 10)
1,1-Dichloroethane	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)
1,1,1-Trichloroethane	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)
Trichloroethylene	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)
Trans-1,2-Dichloroethane	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)
Toluene	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)	ND (< 5)

ND = Compound measured for but not detected.

**SUMMARY OF GROUNDWATER ANALYSIS
METALS AND OTHER CHEMICAL PARAMETERS**

CHEMICAL PARAMETER	RESULTS (UG/L UNLESS INDICATED OTHERWISE)									
	MW-1 SHALLOW	MW-1 DEEP	MW-2 SHALLOW	MW-2 DEEP	MW-3 SHALLOW	MW-3 DEEP	MW-4 SHALLOW	MW-4 DEEP	FIELD BLANK	TRIP BLANK
Cadmium	< 3	< 3	3	45	11	16	99	6	< 3	< 3
Chromium	11	10	14	10	36	14	30	26	< 9	< 9
Copper	19	15	926	41	139	56	147	83	< 10	< 10
Iron	23	34	95	39	< 10	33	< 10	< 10	< 10	20
Lead	< 1	< 1	< 1	29	< 1	40	< 1	< 1	< 1	38
Nickel	< 15	< 15	28	< 15	< 15	< 15	< 15	< 15	< 15	< 15
Zinc	196	40	67	109	87	339	62	59	< 2	17
pH	4.96	5.82	5.60	6.06	5.64	5.84	6.33	5.78	5.90	6.01
Specific Conductance	308	186	156	173	120	156	500	166	4	4
Chloride (mg/l)	32	21	11	19	11	24	11	19	< 1	< 1
Cyanide (mg/l)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

TABLE 5-6

**SUMMARY OF GROUNDWATER ANALYSIS
VOLATILE ORGANICS**

CHEMICAL PARAMETER	RESULTS (UG/L)								
	MW-1 DEEP	MW-1 SHALLOW	MW-2 DEEP	MW-2 SHALLOW	MW-3 DEEP	MW-3 SHALLOW	MW-4 DEEP	MW-4 SHALLOW	TRIP BLANK
1,1 DICHLORO- ETHANE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	1.0 J
1,2-DICHLORO- ETHANE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2 - BUTANONE	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	6.0 J
1,1,-TRICHLORO- ETHANE	5.0	26.0	12.0	22.0	21.0	10.0	28.0	14.0	< 5.0
TRICHLOROETHANE	2.0 J	17.0	5.0	35.0	24.0	6.0	73.0	5.0	< 5.0
TOLUENE	4.0 J	5.0	5.0	5.0	4.0	2.0 J	4.0 J	3.0 J	< 5.0

NOTE: J INDICATES ESTIMATED VALUE

TABLE 5-7

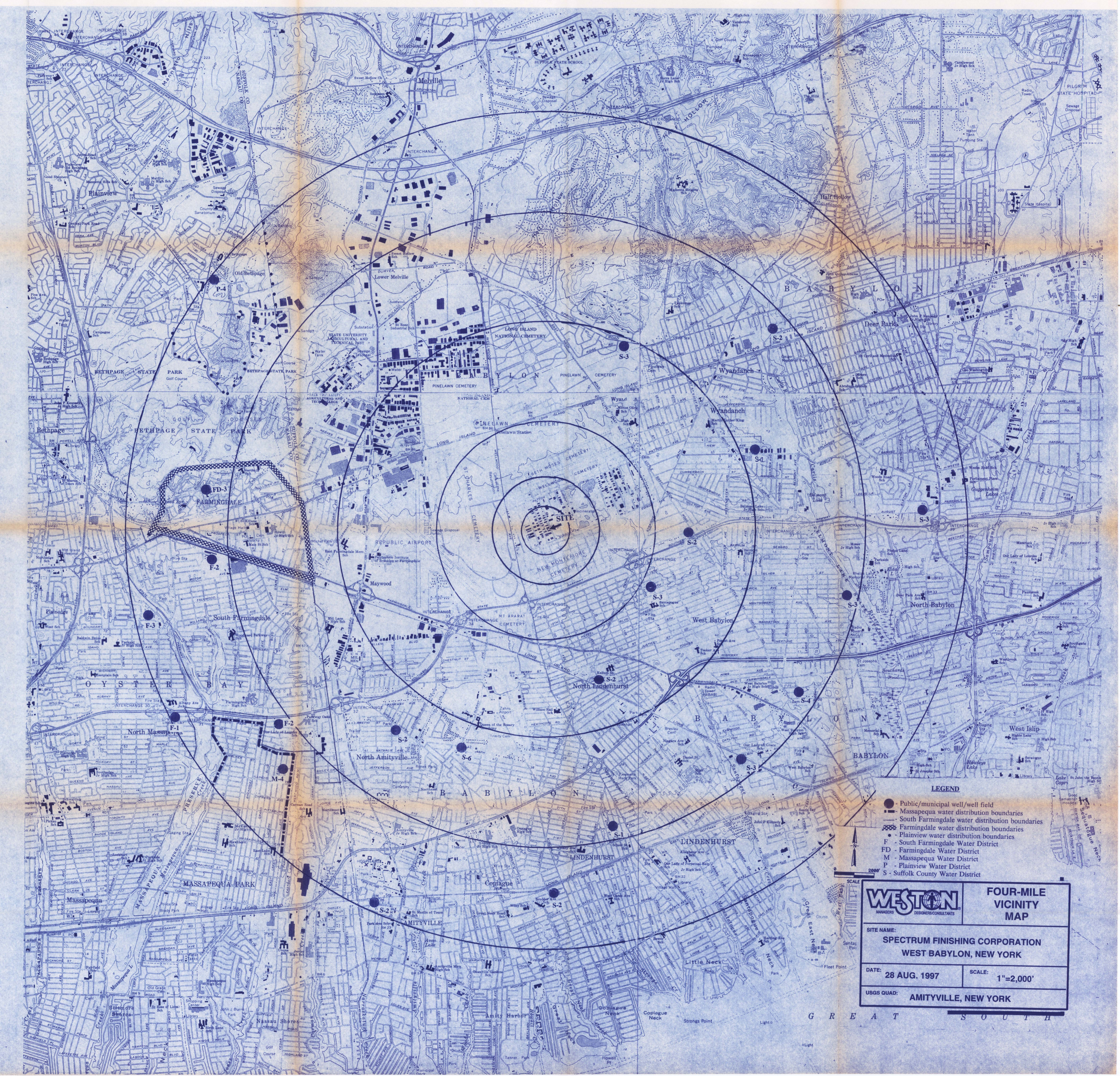
Spectrum Finishing Corp.

Chronology and history of Spectrum Finishing Corp.

- 4-22-68 Graner SCHD informed Spectrum in writing of need for treatment and PE report
- 6-27-68 Received permit to operate
- 3-20-69 } DeChirico informed in writing that new PE report
- 4-10-69 } needed due to alterations in plant
- 5-29-69 Statement from Jacobsen PE that Spectrum does not discharge
- 7-22-69 Pim requesting updated report
- 8-8-69 Saturnino insp. - sludge from ion exchange hauled away to Babylon Town Dump
- 8-12-69 Received updated reported
- 12-11-70 Pim to Spectrum to hire PE as a result of well contamination
- 12-9-70 Sample from leach pool indicated Cu, Cd, Ni, Cr by Gilbert
- 12-17-70 Sample by Strzepek of Sanitary pool indicated Cr, CN
- 1-11-71 Gilbert-Strzepek sample CN, Cu
- 1-15-71 Gilbert-Strzepek sample Cu
- 4-26-71 New report by Jacobsen received
- 11-17-71 Gilbert to Spectrum - no scavenger yet
- 11-26-71 Approved scav used
- 3-20-72 State still looking for answers from Jacobsen Assoc.
- 4-26-72 State still looking
- 6-15-72 Pim describes Jacobsen's report as inadequate
- 8-14-72 State still looking for answers
- 8-21-72 Report approved recycling thru ion exchange, hauling away of sludges via approved scavenger- no discharge
- 1-25-74 } inspections by SCDEC - indication no records kept
- 12-12-74 } of treatment of ion-exchange backwash, no records of any pickups by an approved scavenger since 12-71
- 12-18-74 Puddle by storm drain in parking lot sampled, found Cu, Fe, Cr, Ni, Cd over limits
- 1-2-75 Unsatisfactory sampling letter sent
- 1-3-75 Roy Gilbert of SCDEC requested storm drains be pumped dry by an approved scavenger - done
- 1-3-75 Unsatisfactory sample taken from storm drain
- 1-15-75 Copertino inspection - noted that a collection sump inside plant overflowing out of plant into storm drain
- 1-20-75 requested that 2 large exterior holding tanks be emptied and resealed to prevent leaks as have been occurring evidenced by discolorations
- 1-20-75 Unsatisfactory sample from W storm drain - letter sent 3/4/75

- 1-30-75 Copertino inspection - observed trait of water emanating from somewhere in plant flowing out of plant on ground towards west storm drain. Observed green puddle around west storm drain. DeChirico admitted to a broken tank a few days earlier
- 2-3-75 Sample from W storm drain showed high levels of Cu, Fe, Cr, Ni, Cd letter sent 3/4/75
- 3-5-75 Gilbert-Copertino - observed green spill outside plant on S side, sampled and showed exceedingly unsatisfactory results.

REFERENCE NO. 3



- LEGEND**
- Public/municipal well/well field
 - Massapequa water distribution boundaries
 - South Farmingdale water distribution boundaries
 - Farmingdale water distribution boundaries
 - Plainview water distribution boundaries
 - F - South Farmingdale Water District
 - FD - Farmingdale Water District
 - M - Massapequa Water District
 - P - Plainview Water District
 - S - Suffolk County Water District

WESTON
MANAGERS DESIGNERS/CONSULTANTS

**FOUR-MILE
VICINITY
MAP**

SITE NAME: SPECTRUM FINISHING CORPORATION WEST BABYLON, NEW YORK	
DATE: 28 AUG. 1997	SCALE: 1"=2,000'
USGS QUAD: AMITYVILLE, NEW YORK	

G R E A T S O U T H

REFERENCE NO. 4

CONSULTING ENGINEER
2 GREENWOOD AVENUE
EAST ISLIP, N. Y.

JU 1-6500


MAILING ADDRESS:
P. O. BOX 76
EAST ISLIP, N. Y. 11730

June 3, 1968

Re: Industrial Treatment Waste Process
Spectrum Finishing Corp.
50 Dale Street
Pinelawn, Long Island

Gentlemen,

The attached report pertains to the de-ionization and treatment of process waste from the above finishing plant. All rinse water and drag-out flows below the duck boards in the finishing pit to a central drain where it is collected in a sump, pumped to a de-ionizer and returned as make up and rinse water. The pit floor and collection sump have been treated with an epoxy to assure water tightness. The recharge water will be batch treated and disposed to a sub-surface leaching pool.

Very truly yours,

John A. Jacobsen, E.
LICENSED PROFESSIONAL ENGINEER
NO. 35833
STATE OF NEW YORK

Wellwood Cemetery

St. Charles Cemetery

26

Wellwood Avenue

Platte Ave

Alder St

Bell St

Cabot St

Dale St

Eads St

Fields St

Gleam St

Edison Avenue

Spectrum Finishing Corporation

New Montefiore Cemetery

To New York

Southern State Parkway

Mount Ararat Cemetery

Atlas Location Map

$3\frac{1}{2}" = \text{Approx 1 mile}$

[illegible]

Site Plan

Scale 1"=30'

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Flow Chart: Titanium Alloys

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Flow Chart: Aluminium Alloys

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Flow Chart: Alloys Steels

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Finishing Floor Plan

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Schematic piping layout - Dorrco De-Ionizer

14

The plant is located on the west side of Dale Street, 378 feet north of Edison Street, Pinelawn, Babylon Township. The area is industrially zoned with Wellwood Cemetery to the north and New Montefiore Cemetery to the south, St. Charles Cemetery to the west and the Babylon Incinerator to the east. There are no public wells in the area and the area is not served by public water with each of the twenty or so buildings nearby using individual wells. Ground water is encountered 40 feet below grade.

The plating facilities at this plant are designed for the application of precision aerospace finishes to high strength alloys. The installation itself is small, occupying less than seven hundred square feet of plant space.

The facility performs three basic operations: Plating, Conversion Coating, and Cleaning. Steel alloys are plated either with copper or Cadmium metal; Aluminium parts receive a chromate conversion coating, and titanium alloys are deoiled and cleaned chemically. In the next twelve months Nickel plating will be added to the steel finishing operations; the Nickel plating will be process in the same manner as Copper and Cadmium plating.

Ch
CS'
3-6
W

Since all chemical processing lends itself to description by flow charts, this method has been used in this description

of facilities. The three basic operations are listed by type of metal finish: plating on steels, conversion coating on Aluminium, and descaling of Titanium alloys.

The process is outlined in flow chart fashion, giving location (tank), the solution nomenclature, and its function. The detailed chemical composition of processing solutions; and tank dimensions, capacities, material, and operational solution levels are given on the pages immediately following each process flow chart.

Estimated water requirements for the total facility are 750 to 1000 gals. per day of deionized water. The water system itself is closed. The water is recirculated through a deionizer unit and returns to the processing tanks. Estimated loss due to evaporation is 10%. Effluent volume is estimated to be less than 200 gals. per day. This effluent will come from solutions used to recharge exchange resins and solutions necessary in the waste treatment and destruction of waste products.

Domestic water will be introduced into the system by direct discharge to the collecting sump where it will be de-ionized along with the process waste and pumped to the process as rinse or make-up water. Approximately 200 gal. of recharge water will be relieved of heavy metals in an alkaline media. CN will be reduced by chlorination and Cr+6 reduced.

Positive
AIR Cont?

5.

TANK IDENTIFICATION

- nk 1 Cadmium Plating Bath
- nk 2 Nickel Plating Bath *
- nk 3 Copper Plating Bath
- nk 4 Hydrochloric Acid
- nk 4A Rinse Tank
- nk 5 Cadmium Conversion Coating
- nk 6 Nitric-Hydrofluoric Acid
- nk 7 Caustic Descaler
- nk 8 Detergent Cleaner
- nk 9 Acid Deoxidizer
- nk 10 Aluminium Conversion Coating
- nk 11 Water Rinse*
- nk 12 Water Rinse*
- nk 13 Water Rinse*
- nk 14 Two-stage Water Rinse
- nk 15 Hot Water Rinse
- nk 16 Cold Water Rinse
- nk 17 Hot Water Rinse
- nk 18 Electrolytic Detergent Cleaner
- nk 19 Two-stage Water Rinse

cd
Ni
Cu
Acid

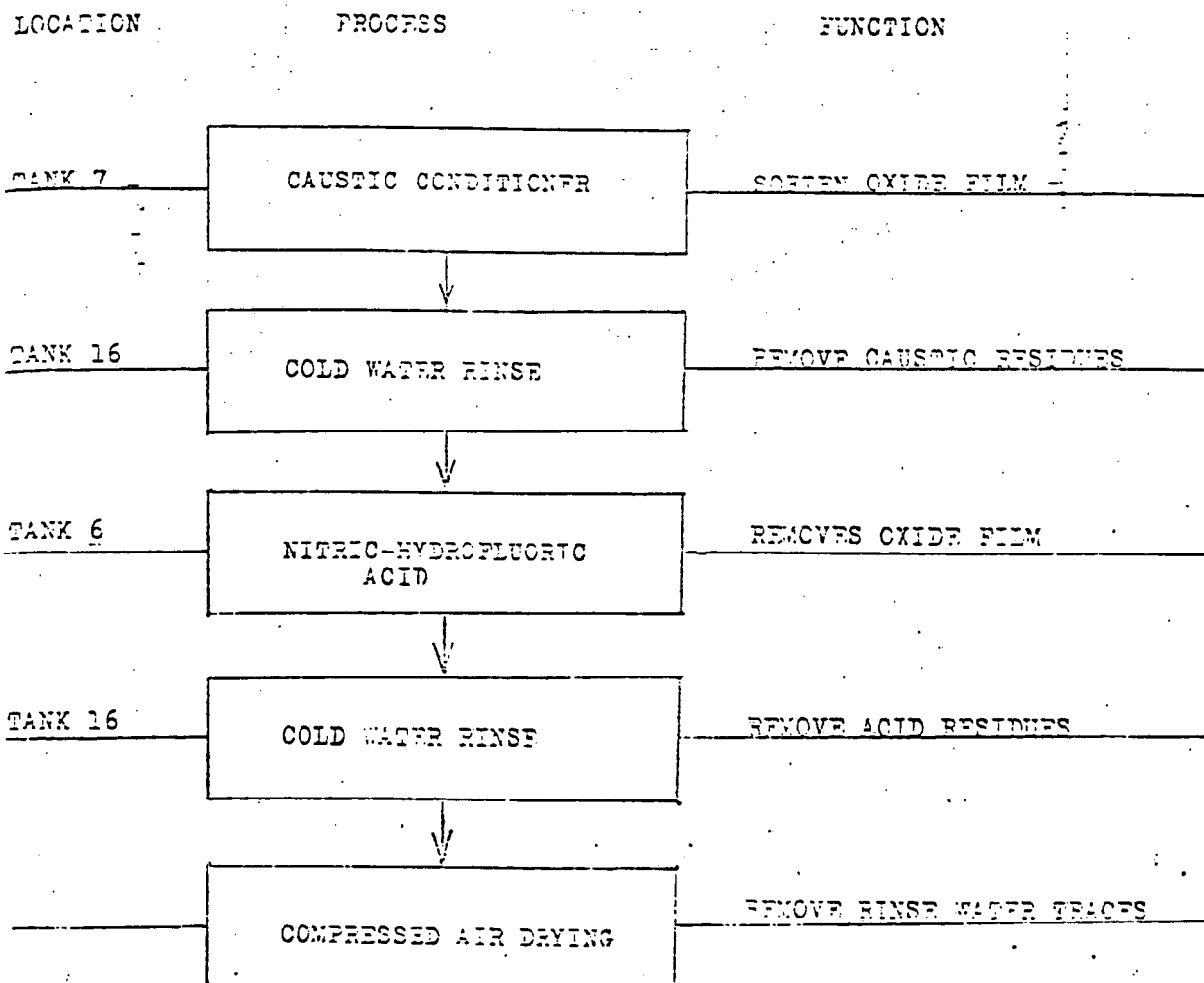
Fl⁻

C₂+L

* Future additional process.

6

FLOW CHART: DESCALING TITANIUM ALLOYS AFTER HEAT TREATMENT



CHEMICAL COMPOSITIONS OF SOLUTIONS EMPLOYED IN
DESCALING OF TITANIUM ALLOYS AND TANK CAPACITIES
AND MATERIALS.

TANK 7 (caustic conditioner):

Dimensions - 6.0' x 3.0' x 4.0'(H)
Material - 300 series stainless steel
Capacity - 475 gals.
Operational Level - 42"
Chemical composition
of solution - 64 oz/gal Caustic Soda; 0.5
oz/gal Sodium Dichromate

TANK 6 (Nitric-Hydrofluoric Acid):

Dimensions - 7.0' x 3.0' x 4.0'(H)
Material - Mild steel, PVC lined
Capacity - 550 gals
Operational Level - 42"
Chemical composition
of solution - 25 oz/gal Nitric Acid; 1.0
oz/gal Hydrofluoric Acid

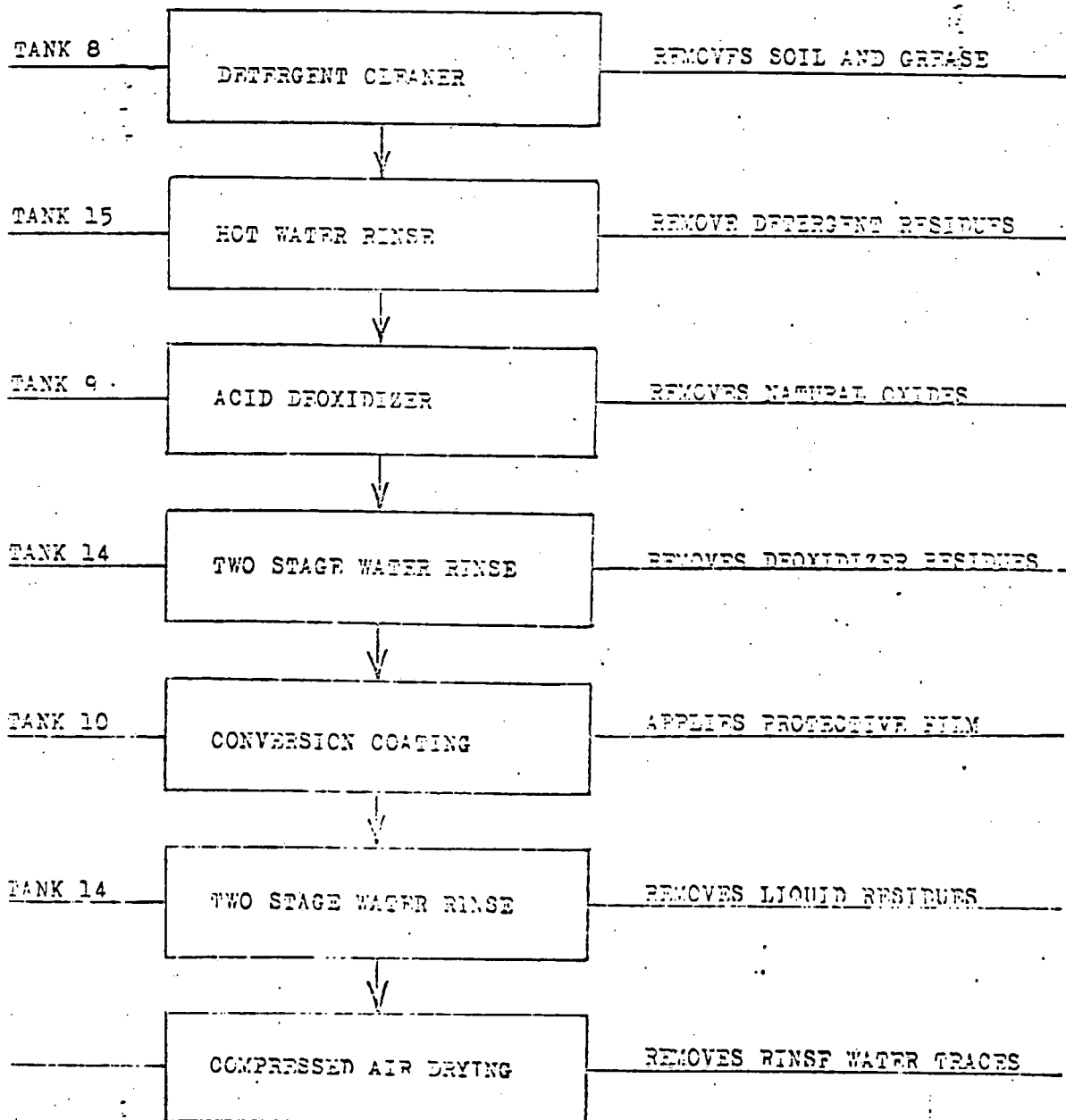
TANK 16 (Cold Water Rinse):

Dimensions - 6.0' x 3.0' x 4.0'(H)
Material - Fibreglass laminate
Capacity - 475 gals
Chemical composition
of solution - Water (D.I.)
Operational Level - 42"

LOCATION

PROCESS

FUNCTION



CHEMICAL COMPOSITION OF SOLUTIONS USED IN THE
APPLICATION OF CONVERSION COATINGS TO ALUMINIUM
ALLOYS, AND TANK CAPACITIES AND MATERIALS

TANK 8 (Detergent Cleaner):

Dimensions	-	6.0' x 3.0' x 4.0'(H)
Material	-	Mild Steel
Capacity	-	475 gals
Operational Level	-	42"
Chemical composition of solution	-	6.0 oz/gal proprietary industrial detergent (biodegradable)

TANK 9 (Acid Deoxidizer):

Dimensions	-	6.0' x 3.0' x 4.0'(H)
Material	-	Fibreglass Laminate
Capacity	-	475 gals
Operational Level	-	42"
Chemical composition of solution	-	13 oz/gal Nitric Acid: 1.0 oz/gal Sodium Dichromate.

TANK 10 (Conversion Coating):

Dimensions	-	3.0' x 6.0' x 4.0'(H)
Material	-	300 series stainless steel
Capacity	-	475 gals.
Operational Level	-	42"
Chemical composition of solution	-	1.0 oz/gal proprietary salts containing a mixture of Chromate, Fluoride, and Nitrate salts of Sodium and Potassium.

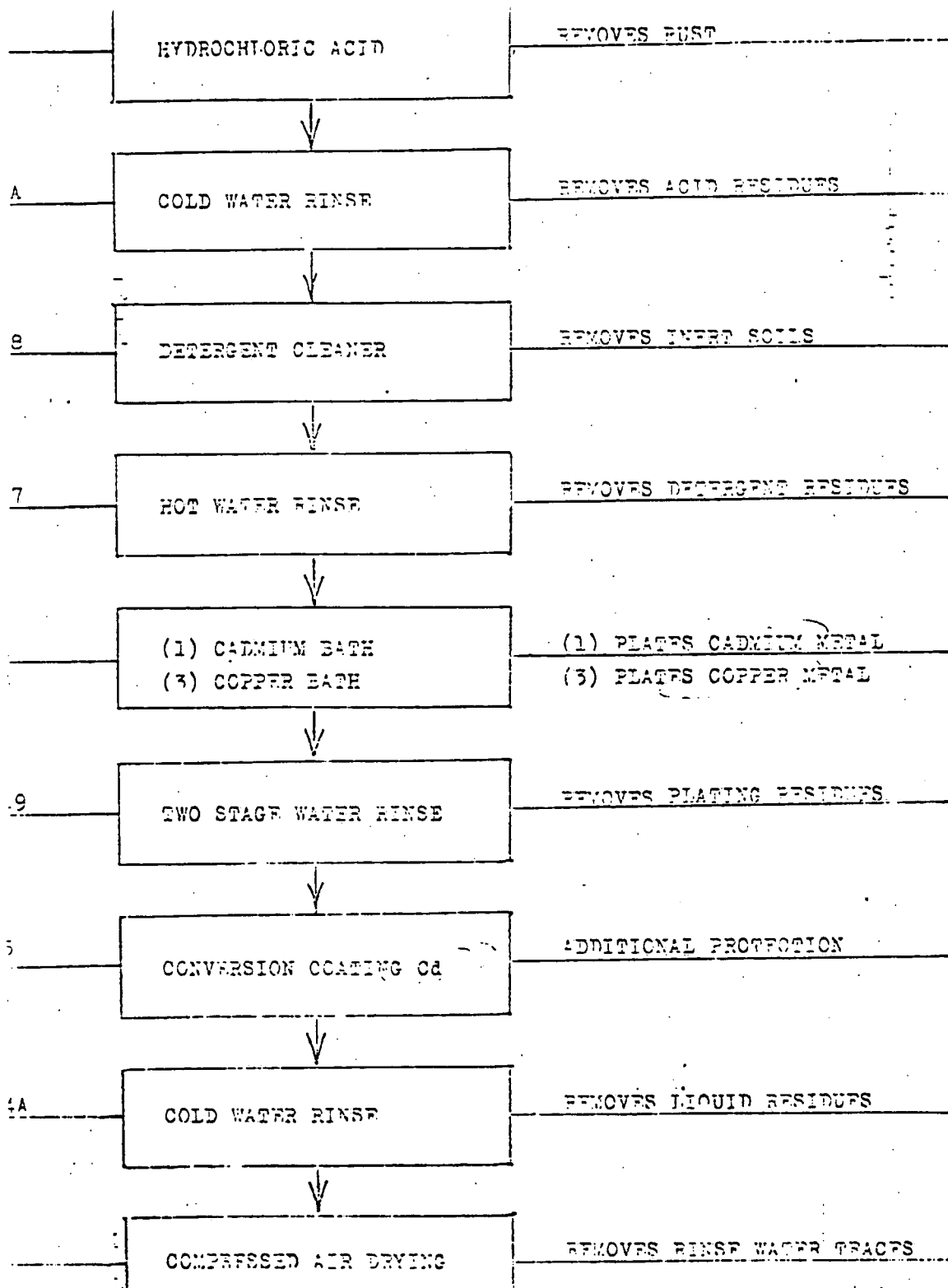
TANK 14 (Two-Stage water rinse):

Dimensions	-	3.0' x 8.0' x 4.0'(H)
Material	-	Fibreglass laminate
Capacity	-	650 gals
Chemical composition of solution	-	Deionized water

TANK 15 (Hot Water rinse):

Dimensions	-	3.0' x 4.0' x 4.0'(H)
Material	-	300 series stainless steel
Capacity	-	325 gals
Chemical composition of solution	-	Deionized water

* * * * *



STEELS, AND TANK CAPACITIES AND MATERIALS

TANK 1 (Cadmium plating bath):

Dimensions	-	3.0' x 8.0' x 4.0'(H)
Material	-	Fibreglass laminate
Capacity	-	650 gals
Operation Level	-	42"
Chemical composition of solution	-	12.0 oz/gal Sodium Cyanide, 2.5 oz/gal Cadmium Oxide, 1.0 oz/gal Sodium Carbonate

TANK 2 (Nickel Plating Bath*):

Dimensions	-	3.0' x 6.0' x 4.0'(H)
Material	-	Fibreglass laminate
Capacity	-	475 gals
Operational Level	-	42"
Chemical composition of solution	-	60 oz/gal Nickel Sulfamate, 5.0 oz/gal Boric Acid

TANK 3 (Copper Plating Bath):

Dimensions	-	3.0' x 6.0' x 4.0'(H)
Material	-	Mild steel
Capacity	-	475 gals
Operation Level	-	42"
Chemical composition of solution	-	3.5 oz/gal Copper Cyanide, 5.0 oz/gal Potassium Hydroxide.

Future Additional Process

Dimensions - 2.0' x 3.0' x 3.0'(H)
Material - Molded fibreglass
Capacity - 110 gals
Operational Level - 30"
Chemical composition
of solution - 64 oz/gal Hydrochloric Acid

4A (Cold Water Rinse):

Dimensions - 2.0' x 3.0' x 3.0'(H)
Material - Molded Fibreglass
Capacity - 110 gals
Operational Level - 30"
Chemical composition
of solution - Deionized water

5 (Cadmium Conversion Coating):

Dimensions - 2.0' x 3.0' x 3.0'(H)
Material - Molded Fibreglass
Capacity - 110 gals
Operational Level - 30"
Chemical composition
of solution - 0.5 oz/gal Chromic Acid.

17 (Hot Water Rinse):

Dimensions - 3.0' x 6.0' x 4.0'(H)
Material - Fibreglass laminate
Capacity - 475 gals
Operational Level - 42"
Chemical composition
of solution - Deionized water

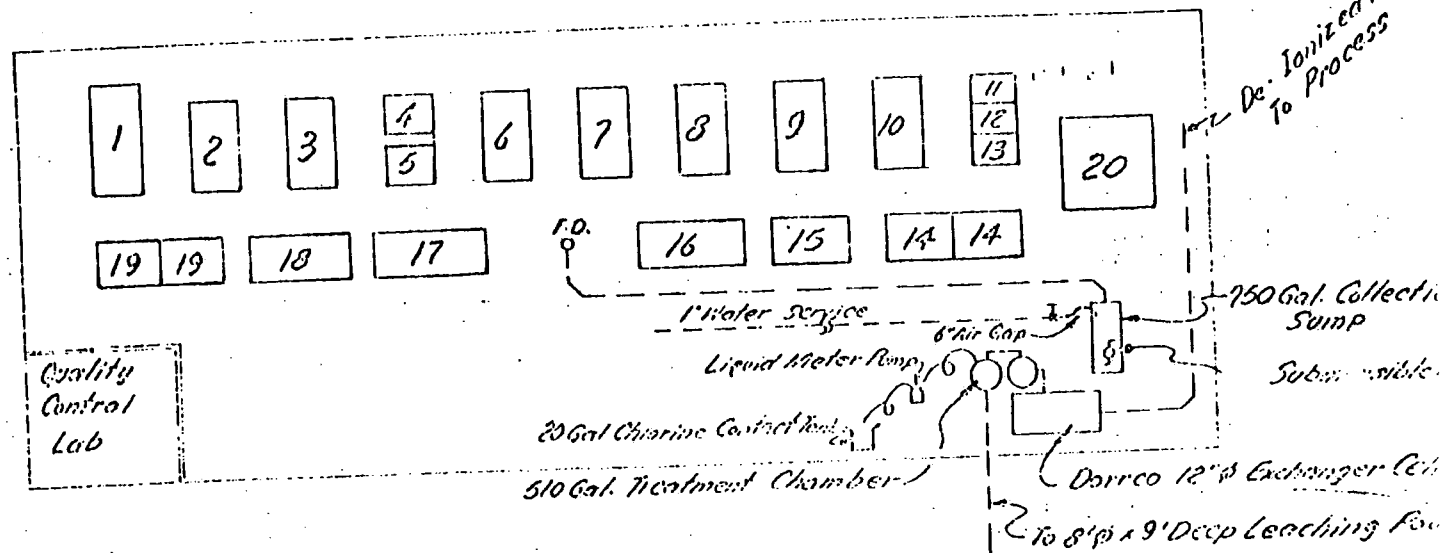
18 (Detergent Cleaner):

Dimensions	-	3.0' x 6.0' x 4.0' (H)
Material	-	Mild steel
Capacity	-	475 gals
Operational Level	-	42"
Chemical composition of solution	-	6.0 oz/gal Electrolytic grade industrial detergent (biodegradable)

19 (Two-stage Water Rinse):

Dimensions	-	3.0' x 8.0' x 4.0' (H)
Material	-	Fibreglass laminate
Capacity	-	650 gals
Chemical composition of solution	-	Deionized water

* * * * *

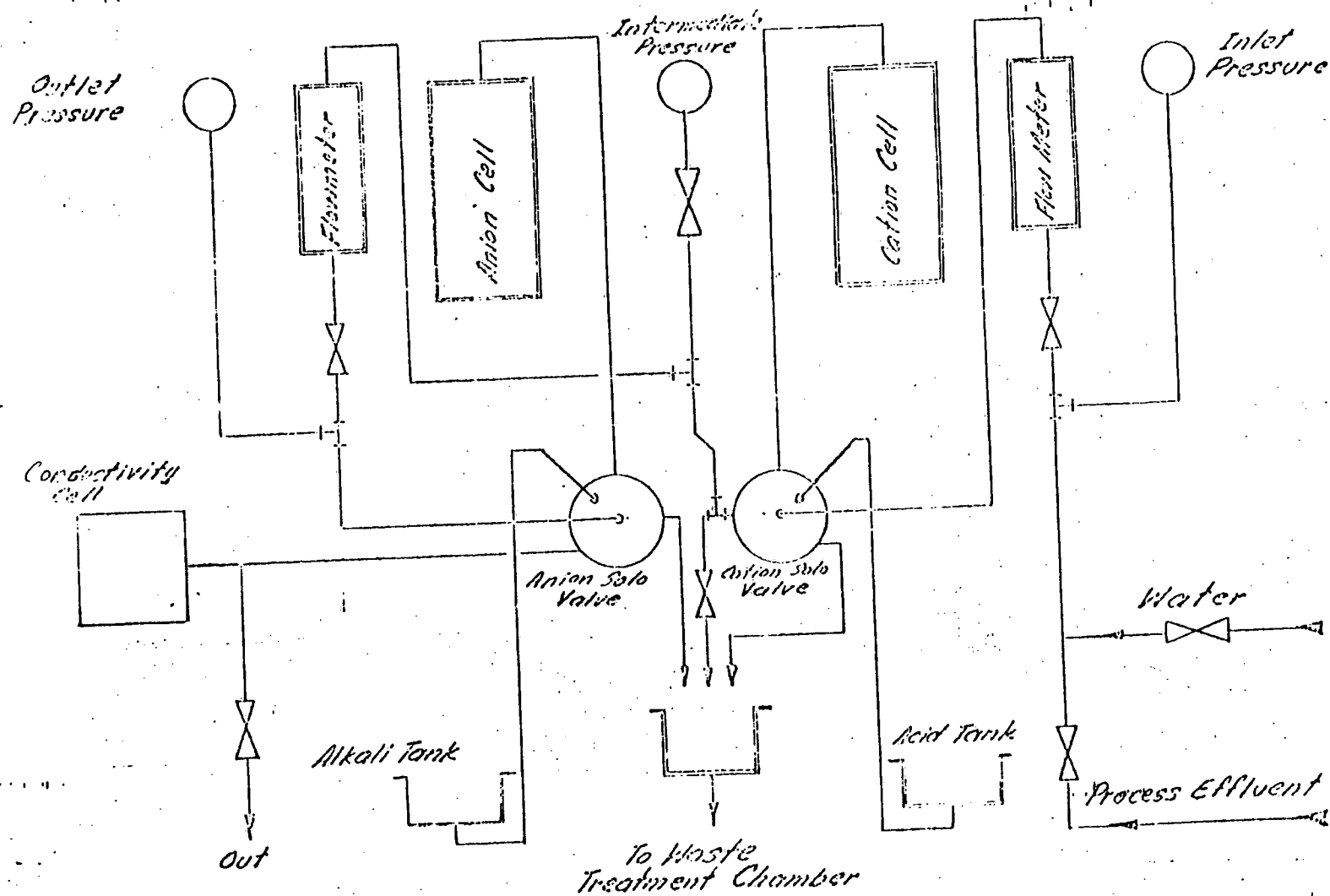


Finishing Floor Plan No Scale

The entire finishing floor is Polyester
Sealed with a protective curb.
The central floor drain conveys all
waste to the collection sump.

- | | |
|-----------------------------|--------------------------------|
| 1. Cadmium Plate Tank | 11. Tank S.S. |
| 2. Nickel Plate Tank | 12. Tank S.S. |
| 3. Copper Plate Tank | 13. Tank S.S. |
| 4. HCl Pickle | 14. Two Stage Water Rinse Tank |
| 5. Iridite Tank | 15. Hot Water Rinse Tank |
| 6. Nitric - HF Tank | 16. - Tank F.G. |
| 7. Turco # 4316 Tank | 17. Hot Water Rinse Tank |
| 8. Alkaline Cleaner Tank | 18. Copper Cleaner |
| 9. Deoxidizer Tank | 19. Two Stage Water Rinse Tank |
| 10. Conversion Coating Tank | 20. Oven |

17



Schematic Piping Layout - Dorco De-Ionizer

(continued to page 6)

The recharge water from the deionizer will be retained in a 40 gallon holding compartment in the rear of the deionizing unit. Periodically it will be withdrawn into a lined 55 gallon drum which will be provided with a bottom drain valve and a decanting drain valve 12" above the bottom. The tank will be provided in duplicate. The pH of the recharge water will be brought to 2.5 by addition of sulfuric acid and agitated with air. Sodium meta bisulphide will be added and agitated until the indicator test shows that chromates have been reduced. caustic soda will then be added to bring the pH up to 8.5 to facilitate the precipitation of the chrome plus other heavy metals. Cyanide will be destroyed by chlorination. After precipitation the tank will be decanted and the treated effluent returned to the central collecting sump for deionization and introduction to the plating process. The sludge from the bottom of the tanks will be deposited in a separate 55 gallon holding tank and disposed at the town deposit area. An operation report shall be kept in effect at all times and mailed to the Suffolk County Department of Health when complete. The report shall show the date, type and quantity of chemicals added, and the pH during the various stages of the treatment operation.

REFERENCE NO. 5

PHONE CONVERSATION RECORD

Conversation with:

Name Bob Stuart

Company _____

Address _____

Phone (516) 444-0240

Subject Spectrum Finishing Co. FOIA #95-1234

Date 8 16 1996

Time _____ AM/PM

☐ Originator Placed Call

☐ Originator Received Call

W.O. No. _____

Notes: Bob indicated that NTL Circuits had been delisted by the State of New York. NTL circuits Closed the pools which were located on-site in the 1980's. The pools were re-opened (Not opened by NTL). Spectrum Finishing was dumping waste into these reopened pools.

Spectrum Finishing declared bankruptcy. Only the Phase II Draft Report has been completed.

Bob indicated that NY State completed a report about the ^{superfund} area near the site. This report indicated that Chlorinated solvents were detected in the groundwater.

Barbara Sebach will send a copy of the Report
(516) 444-0200

Chris Laferriere
(516) 444-0242

☐ File _____

☐ Tickle File _____

☐ Follow-Up By: _____

☐ Copy/Route To: _____

Follow-Up-Action: _____

Originator's Initials _____

REFERENCE NO. 6



DEPARTMENT OF HEALTH

ONE OLD INDIAN HEAD ROAD
COMMACK, NEW YORK 11725

GEORGE E. LEONE, M.D., M.P.H.
COMMISSIONER

DIVISION OF ENVIRONMENTAL
HEALTH SERVICES
WESTERN DISTRICT OFFICE

543-1116

AREA SERVED:
TOWNSHIPS OF
BABYLON
HUNTINGTON
ISLIP
SMITHTOWN

June 27, 1968

Spectrum Finishing Corp.
Dale Street
Islip, New York
Attn: Mr. DeChirico

RE: PERMIT OF OPERATION, SPECTRUM FINISHING CORP.

Dear Mr. DeChirico:

This letter will serve to authorize the operation of the referred waste treatment system in accordance with the permit of construction and in addition to the provisions as follows:

That a suitable record of operating data shall be kept and made available for inspection by representatives of the Suffolk County Department of Health.

That any interruption of operation shall be reported immediately to this Department.

That whatever sludge and scum is removed from any part of the industrial waste treatment system, shall be done in such a manner as to cause no nuisance and that the sludge or scum be disposed of in a suitable and adequate manner.

That this operational permit shall expire one year from date and subsequent permits shall be contingent on demonstration of satisfactory operation of the treatment process to the satisfaction of the Suffolk County Department of Health.

Sincerely,

A. Winkler

A. A. Winkler, P.E.
District Engineer

Wjf

REFERENCE NO. 7

In the Matter of Compliance with Sections
17-0501 and 17-0503 of the Environmental Con-
servation Law and 6 NYCRR 703,
by

SPECTRUM FINISHING CORP.

(Suffolk County) Respondent . . . X

ORDER ON CONSENT

FILE NO. _____

Respondent having waived public hearing or other proceedings in this matter, and accepted the terms and conditions of this Order by virtue of the subscript Consent, it is hereby

ORDERED, that Respondent shall make such modifications, repairs, or additions to its facilities at premises 50 Dale Street, West Babylon, New York, as are necessary to abate discharge of waste matter into the waters of the State, in contravention of the effluent standards set forth in Appendix A attached hereto. Such changes are to be timely made strictly in accordance with the compliance schedule recited in Appendix A; and it is further

ORDERED, that Respondent shall, within twenty (20) days of service of a copy of this Order by registered mail, post security with the Department in the form of a surety bond in the sum of Five Thousand (\$5,000) Dollars, issued by a company licensed to do business in the State of New York, and further, Respondent shall be assessed a penalty in the sum of Five Hundred (\$500) Dollars, to be paid twenty (20) days after receipt of a copy of this Order. The Five Thousand Dollar surety bond shall be held by this Department for a period of one (1) year; and it is further

ORDERED, that Respondent shall maintain permanent records of scavenger waste pick-up and that said records are to be available for inspection by the New York State Department of Environmental Conservation and the Suffolk County Department of Environmental Control, at all times; and it is further

ORDERED, that this Order shall be deemed binding on Respondent, its successors and assigns, and all persons, firms, and corporations acting under or for it, including, but not limited to those who may carry on any or all of the operations now being conducted by Respondent, whether at the present location, or at any other in this State; and it is further

ORDERED, that in those instances in which the Respondent desires that any of the provisions, terms, or conditions of this Order be changed, it shall make written application, setting forth the grounds for the relief sought, to the Commissioner, c/o Andrew J. Orensky, Regional Attorney, Building 40, S.U.N.Y. Stony Brook, New York 11794; and it is further

...that any change in this Order shall not be made or become effective, except as specifically set forth by written order of the Commissioner, such written order being made either upon written application of the Respondent, or upon the Commissioner's own findings.

CONSENT BY RESPONDENT

Respondent acknowledges the authority and jurisdiction of the Commissioner of Environmental Conservation of the State of New York to issue the foregoing Order, waives public hearing or other proceedings in this matter, accepts the terms and conditions set forth in the Order, and consents to the issuance thereof.

SPECTRUM FINISHING CORP.

Dated: Albany, New York
1975

OGDEN REID

Commissioner of Environmental Conservation

To: President
Spectrum Finishing Corp.
50 Dale Street
West Babylon, New York 11704

STATE OF NEW YORK)

ss.:

COUNTY OF SUFFOLK)

On the day of 1975, before me personally came
and said that he resides at to me known, who being duly sworn, deposed
that he is the of the Respondent Corporation, and that he
executed the foregoing Consent, and that he signed his name as authorized by
said corporation.

NOTARY PUBLIC

APPENDIX A

Compliance Schedule

for

SPECTRUM FINISHING CORP.

By May 1, 1975

Respondent shall see that all outside tanks are to be sealed to prevent any leakage and further, Respondent shall install a high level alarm on all overflow tanks in its shop.

By May 15, 1975

The New York State Department of Environmental Conservation and the Suffolk County Department of Environmental Control shall make a final inspection for compliance.

REFERENCE NO. 8

NTY OF SUFFOLK
ARTMENT OF HEALTH SERVICES

the Matter of the Alleged
Violation of Article 12
the Suffolk County Sanitary Code

Strum Finishing Corp.
Dale Street
Babylon, New York 11704
Respondent.

ORDER ON CONSENT
NO. IW 81-53

DATE: 12-1-81

GENERAL PROVISIONS

Department alleges that the above-named Respondent has failed comply with the provisions of the Suffolk County Sanitary Code as specified below. Because of such alleged non-compliance, the above-named Respondent consents and agrees to the issuance of this Order on Consent, and agrees to be bound by the terms, conditions and provisions stated herein.

Respondent understands that by entering into the Order on Consent with the Department, he is affirmatively and voluntarily waiving his right to a formal adjudicatory proceeding with respect to the matters herein addressed. Although the Department will not pursue further enforcement action with respect to the specific alleged violations of law set forth below if the above-named Respondent enters into this Order and abides by its terms, Respondent understands that the Department is not agreeing to forbearance from bringing enforcement action regarding alleged violations not specified by this Order. Moreover, Respondent understands that notwithstanding his execution of this Order on Consent, his failure to strictly comply with all of the terms, conditions and provisions contained herein will revive the Department's rights regarding the violations alleged as set forth below subject to a set-off for any fines already paid pursuant to this Order on Consent. Further, the Respondent is hereby advised that this Order on Consent, when executed by the Respondent's agent and the Commissioner or duly authorized representative has the force and effect of a Commissioner's Order, the violation of which is subject to penalties provided in Section 213 of Article 2 of the Suffolk County Sanitary

Modification of any of the provisions of this Order on Consent may be obtained by a timely written request demonstrating good and sufficient cause for the change or extension requested. No modification of this Order shall be effective unless and until it is specifically set forth in writing by the Department.

SPECIFICATION OF ALLEGED VIOLATIONS

s alleged that the Respondent above-named failed to comply with the following provisions of the Suffolk County Sanitary Code as indicated below:

Article 12, Section 1205 (unpermitted discharge) on October 1, 1981, August 8, 1981, (2 violations), July 2, 1981 (2 violations), June 4, 1981, April 30, 1980 (2 violations) and January 4, 1980.
Article 12, Section 1215 (unapproved storage of toxic or hazardous materials) on October 1, 1981, and May 29, 1981.
Article 12, Section 1207, (failure to report a spill) on October 1, 1981, and January 4, 1980.

SPECIFIC TERMS AND CONDITIONS

In satisfaction of the above-named Respondent's alleged violations of the Suffolk County Sanitary Code, the Respondent agrees to the signing and issuance of this Order of the Commissioner of the Suffolk County Department of Health Services, and the Respondent agrees to be bound by the terms and conditions following as well as the above General Provisions.

The Respondent agrees not to discharge any of its industrial waste into the ground, groundwaters, surface waters or subsurface water receiving facilities unless and until a State Pollutant Discharge Elimination Systems (SPDES) Permit has been obtained for such discharge.

By January 3, 1982, Respondent shall have submitted complete applications for all permits, licenses and certificates to operate in accordance with the provisions of Article 12 of the Suffolk County Sanitary Code and provisions of Part 360 pursuant to Section 360.3 of the New York State Environmental Conservation Law.

For information and applications for the aforementioned may be obtained by contacting Mr. Peter Akras of this Department, 234-2622, extension 243.

By March 3, 1982, Respondent agrees to have completed the relocation of its storage facility for its toxic or hazardous materials, in compliance with provisions of Article 12 of the Suffolk County Sanitary Code.

SPECIFIC TERMS AND CONDITIONS
(continued)

. By December 17, 1981, Respondent shall have moved all of its storage of toxic or hazardous materials from outdoors to a suitable location inside of Respondent's building and shall continue to store its toxic or hazardous materials indoors unless and until Respondent receives approval from this Department for outdoor storage.

. By December 24, 1981, Respondent agrees to have the cadmium contaminated storm drain, which is located approximately ten feet north east of Respondent's garage door, emptied of its liquid and solid contents through the services of an industrial waste scavenger licensed therefor by the New York State Department of Environmental Conservation. Respondent agrees to submit to this Department a copy of the scavenger receipt for the aforementioned cleanout.

Respondent also agrees to notify this Department at least two week days prior to the date of clean out so that a Department representative may be present to observe this clean out.

Respondent agrees to permit representatives of this Department to conduct hydro-static testing of Respondent's aboveground tanks.

In satisfaction of the violations alleged herein, Respondent agrees to the imposition of a civil penalty in the amount of Four Thousand (\$4,000) dollars, but that Three Thousand Five Hundred (\$3,500) dollars of this civil penalty shall be suspended and ultimately discharged upon Respondent's compliance with the terms, conditions and provisions of this Order on Consent. The remaining Five Hundred (\$500) dollar portion of the civil penalty shall be paid to the Department of Health Services and shall be remitted with the return of this duly executed Order on Consent.

CONSENT BY RESPONDENT

The Respondent herein named acknowledges the authority and jurisdiction of the Commissioner of the Suffolk County Department of Health Services to issue the foregoing Order on Consent, and Respondent voluntarily waives public hearing in this matter and agrees to be bound by the terms, conditions and provisions of this Order of the Commissioner.

Dated Dec 16, 1981

Respondent SPECTRUM FINISHING CORP.

By: (signature) [Signature]

(printed) [Name]

Title [Title]

STATE OF NEW YORK)

SS.:

COUNTY OF SUFFOLK)

NOTARY PUBLIC, STATE OF NEW YORK
NO. 33461-1-80
Commission Expires 23

On the 16th day of December, 1981, before me personally came [Name] to me known, who being duly sworn, deposed and said that he resides at [Address] that he is the [Title] of Respondent corporation, and that he signed his name as authorized by said corporation with full authority to do so.

[Signature]
NOTARY PUBLIC

CONSENT BY COMMISSIONER

The Commissioner of the Suffolk County Department of Health Services agrees to waive further administrative enforcement action against the Respondent named herein, and the Commissioner agrees to accept the Respondent's consent to the entry and issuance of this Order in full satisfaction of the Department's allegations herein listed, PROVIDED THAT the Respondent duly executes this Order and strictly adheres to all of its terms, conditions and provisions.

Dated: 1/8/82
Suffrage, New York

[Signature]
David Harris, M.D., M.P.H.
Commissioner
Suffolk County Department
of Health Services

By:

REFERENCE NO. 9

STATE OF NEW YORK: COUNTY OF SUFFOLK
DEPARTMENT OF HEALTH SERVICES

-----X
In the Matter of the Complaint

- against -

Spectrum Finishing Corp.
50 Dale Street
West Babylon, New York 11704

NOTICE OF
FORMAL HEARING

Respondent.

Under and Pursuant to the Public Health Law
of the State of New York, the Sanitary Code
of the County of Suffolk and the Statutes
of the State of New York and the Laws and
Ordinances of the County of Suffolk.

-----X
TO: Spectrum Finishing Corp.
50 Dale Street
West Babylon, New York 11704

PLEASE TAKE NOTICE:

THAT YOU ARE DIRECTED TO APPEAR at the office of the
Department of Health Services of the County of Suffolk at
225 Rabro Drive East, Hauppauge, New York, Room #300, on
the 11th day of May, 1982, at 1:30 PM, in connection with
certain alleged violations of Article 12 of the Suffolk
County Sanitary Code and/or ordinances, rules, regulations
and orders promulgated thereunder, to wit:

THAT, Order on Consent IW 81-53 negotiated by
and duly entered into by Respondent, above named, binding
the said Respondent to compliance therewith, has been violated
by the Respondent in that:

1. Respondents did discharge toxic or hazardous materials on March 2, 1982, February 2, 1982, and January 27, 1982, in violation of Paragraph #1 of Order on Consent IW 81-53.

2. Respondent did not by January 3, 1982, submit applications and plans for a certificate to operate a storage facility in compliance with Article 12 as required by Paragraph 2 of Order on Consent IW81-53.

3. Respondent did not by March 3, 1982, complete construction of its storage facility for toxic or hazardous materials as required in Paragraph #3 of Order on Consent IW81-53.

4. Respondent did not by December 17, 1981, move all storage of its toxic or hazardous materials indoors and continue to store its toxic or hazardous materials indoors as required in Paragraph #4 of Order on Consent IW 81-53, in that Respondent did store toxic or hazardous materials outdoors on January 21, 1982, January 26, 1982, January 27, 1982, February 2, 1982, February 8, 1982 and March 2, 1982.

5. That the violations alleged in Item #1 above are also violations of Article 12, Section 1205(a)(6) - discharging in excess of New York State Discharge Standards.

THAT, each day of violation constitutes a separate and distinct violation subject to a civil penalty not to exceed the sum of Five Hundred (\$500) Dollars for each day of violation, as prescribed by Article 2, Section 218, Paragraphs 2 and 5 of the Sanitary Code of Suffolk County and

Section 309 of the Public Health Law of the State of New York.

THAT, you may appear with or without counsel and you may produce any witnesses and evidence in your behalf.

THAT, you may contact the Hearing Coordination Officer at 435-2785, if you have questions relative to the hearing or require additional information.

WHEREFORE, the Department as Plaintiff in this matter demands:

a). A finding of violation in each of the above-enumerated allegations;

b). An order requiring the payment of a civil penalty in the amount of:

I. One Thousand Five Hundred (\$1500) dollars for the three violations of Paragraph #1 of Order on Consent IW 81-53 as detailed in Item #1 above,

II. Five Hundred (\$500) dollars for violation of Paragraph #2 of Order on Consent IW 81-53 as detailed in Item #2 above,

III. Five Hundred (\$500) dollars for violation of Paragraph #3 of Order on Consent IW81-53 as detailed in Item #3 above,

IV. Three Thousand (\$3,000) dollars for the six violations of Paragraph #4 of Order on Consent IW81-53 as detailed in Item #4 above,

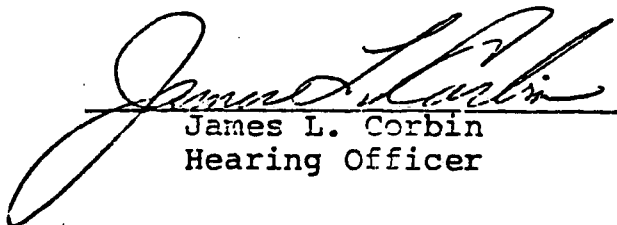
V. One Thousand Five Hundred (\$1,500) dollars for the three violations of Article 12, Section 1205(a)(6)

as detailed in Item #5 above.

c). An order requiring immediate cessation of all unpermitted discharges, immediate compliance with Article 12 regarding Respondent's storage of toxic or hazardous materials, and such other relief as may be appropriate and necessary under the circumstances.

PLEASE TAKE NOTICE

THAT, upon your failure to appear, the hearing may be held in your absence and a determination may be made, and such proceedings instituted under the law, either administrative, civil or criminal, as may be deemed necessary and appropriate in the circumstances.


James L. Corbin
Hearing Officer

DATED:

Hauppauge, New York

REFERENCE NO. 10

FROST ASSOCIATES

P.O.Box 495, Essex, Connecticut 06426
(860) 767-7644 FAX (860) 767-1971

October 25, 1996

To: Roy F. Weston Inc
Raritan Plaza 111, Suite 2B
Edison, New Jersey 08837-3616

Attn: Rich Settino

Fr: Frost Associates
P.O. Box 495
Essex, Conn 06426

Tel: (203) 767-1254
Fax: (203) 767-7069

Sub: Spectrum Finishing Corp
West Babalon, NY

CERCLIS:

Job: 04200-022-081-0132-02

Site Longitude: 73-23-34 73.392776
Site Latitude : 40-43-56 40.732220

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. CENTRACTS may have up to ten radii of any length. 1000 block groups, and 15000 block group sides.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from the Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, P.O. Box 495, Essex, Conn. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are then extracted from the respective county files to obtain all sides of the included Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

Spectrum Finishing Corp
West Babalon, NY

A method to solve for the area of a polygon is to take one-half the sum of the products obtained by multiplying each X-coordinate by the difference between the adjacent Y-coordinates. For a polygon with coordinates at adjacent angles A, B, C, D, and E. The formula can be expressed:

$$\text{Area} = 1/2 \{ X_a(Y_e - Y_b) + X_b(Y_a - Y_c) + X_c(Y_b - Y_d) + X_d(Y_c - Y_e) + X_e(Y_d - Y_a) \}$$

For each ring, the selected Block Groups will be inside, outside, or intersected by the ring. When a polygon is intersected, the partial Block Group area within that ring is calculated using the method described below.

When a ring intersects a Block Group, the intersect points are solved and plotted at the points where the ring enters and exits the shape. The chord line, a line within the circle connecting the intersect points is determined. This chord line is used to calculate the segment area, the half moon shape between the chord line and the ring, and the sub-polygon created by the chord line and the Block Group boundaries that lie outside the ring.

The segment area is subtracted from the sub-polygon area to determine the area of the sub-polygon outside the ring. The area outside the ring is then subtracted from the area of the entire polygon to arrive at the inside area. This inside area is then divided by the tract's total area to determine the percentage of area within the ring. This process is repeated for each block group that is intersected by one of the rings. The total area, partial area, and percentage of partial area of those block groups within, or partially within a ring, are held in memory for the report.

On occasion, the algorithm described above is unable to determine the area of the partial area. Within the report program is a "Paint" routine which allows an enclosed shape to be highlighted. Another routine calculates the percentage of highlighted screen pixels to the pixels within the polygon. A manual entry is allowed. Both the "paint" method and manual entry method over ride the calculated method.

CENTRACTS lists, starting on page 4, all Block Groups in State, County, Census Tract, and Block Group ID order that lie within, or partially within, the maximum ring. Each Block Group is identified by a City or Town name and by the Block Group's State, County, Tract and Block Group ID number. Following is the Block Group's 1990 population and house count extracted from the Census Bureau's 1990 STF-1A files.

The next four columns display water source data from the 1990 STF-3A files. The first column is "Units with Public system or private company source of water", followed by "Units with individual well, Drilled, source of water"; "Units with individual well, Dug, source of water" and "Units with Other source of water".

For each ring, CENTRACTS then shows the Block Groups that are within that ring, the Block Group's total area in square miles, the partial area of the Block Group within that ring, and the partial percentage within the ring. The areas of the included Block Group and the partial areas are then totaled.

The last section tallies the demographic data within each ring. The percentage of area for each Block Group is multiplied times the census data for that Block Group and totaled for all Block Group's within the ring. Ring totals are then determined by subtracting the three mile data from the four mile, the two mile from the three mile, one from the two, etc... Population on private wells is calculated using the formula: $((\text{Drilled} + \text{Dug Wells}) / \text{Households}) * \text{Population}$

Spectrum Finishing Corp
West Babalon, NY

=====
Site Data
=====

Population: 202132.86
Households: 64856.65
Drilled Wells: 85.33
Dug Wells: 421.97
Other Water Sources: 147.79

=====
Partial (RING) data
=====

---- Within Ring: 4 Mile(s) and 3 Mile(s) ----

Population: 95022.76
Households: 31111.97
Drilled Wells: 17.38
Dug Wells: 122.79
Other Water Sources: 75.09

** Population On Private Wells: 428.10

---- Within Ring: 3 Mile(s) and 2 Mile(s) ----

Population: 74230.62
Households: 23740.34
Drilled Wells: 28.74
Dug Wells: 132.51
Other Water Sources: 47.60

** Population On Private Wells: 504.17

---- Within Ring: 2 Mile(s) and 1 Mile(s) ----

Population: 30490.10
Households: 9304.53
Drilled Wells: 29.84
Dug Wells: 158.11
Other Water Sources: 25.10

** Population On Private Wells: 615.91

---- Within Ring: 1 Mile(s) and .5 Mile(s) ----

Population: 2332.31
Households: 683.97
Drilled Wells: 6.07
Dug Wells: 8.56
Other Water Sources: 0.00

** Population On Private Wells: 49.90

Spectrum Finishing Corp
West Babalon, NY

----- Within Ring: .5 Mile(s) and .25 Mile(s) -----

Population:	33.92
Households:	9.41
Drilled Wells:	1.96
Dug Wells:	0.00
Other Water Sources:	0.00

** Population On Private Wells: 7.07

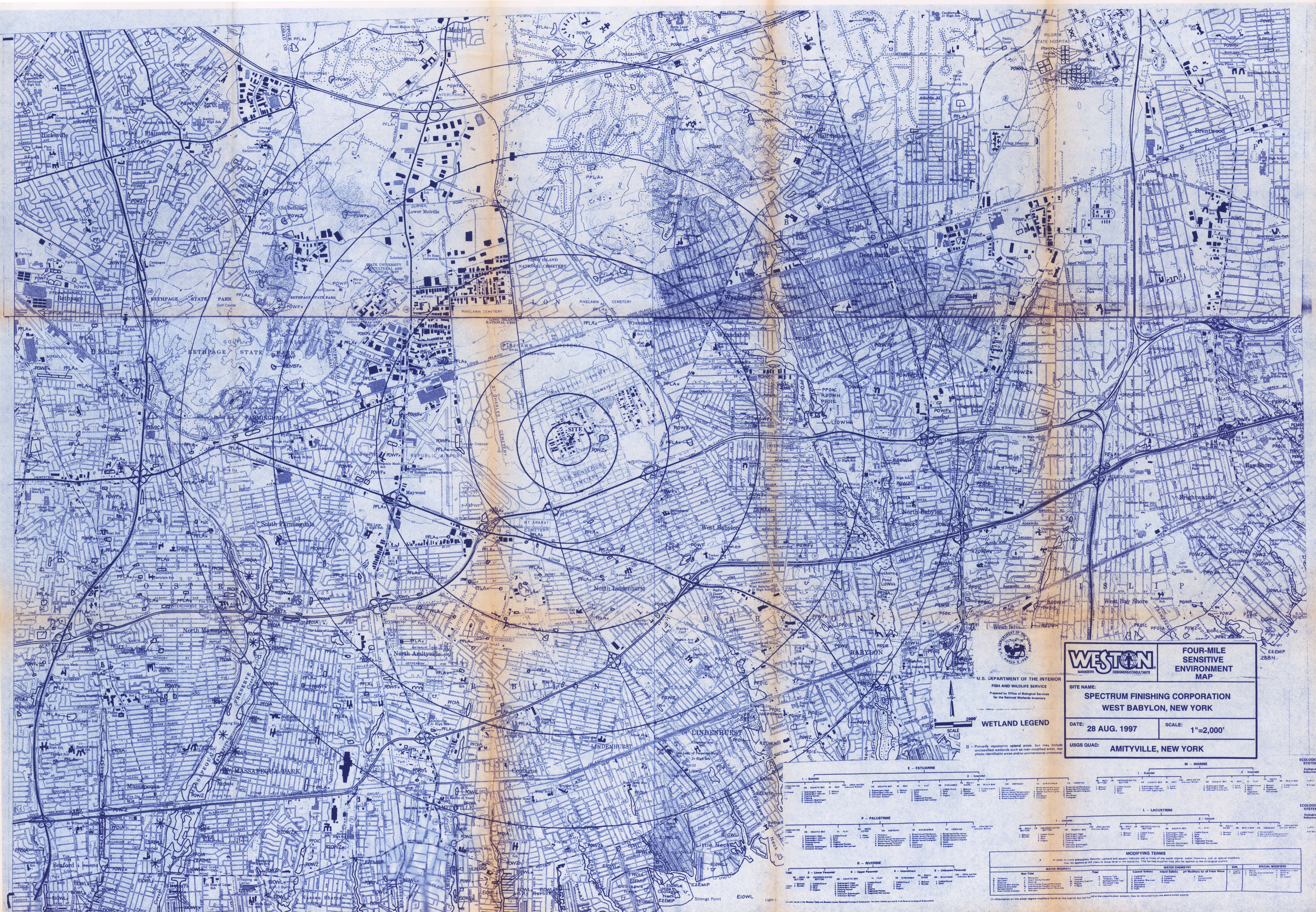
----- Within Ring: .25 Mile(s) and 0 Mile(s) -----

Population:	23.15
Households:	6.42
Drilled Wells:	1.34
Dug Wells:	0.00
Other Water Sources:	0.00

** Population On Private Wells: 4.82

** Total Population On Private Wells: 1609.97

REFERENCE NO. 11



REFERENCE NO. 12

APPENDIX B

BORING LOGS

GRB

Job No.: _____

Boring: MW - 1S

Summary of Drilling and Sampling Information

Client: Spectrum Finishing Corporation

Project: Phase II Inactive
Hazardous Waste Inv.

Rig: Acker 82

Site: 50 Dale St/Babylon

Contractor: Empire Soils Investigations, Inc. Driller: Paul Keeney

Drilling Method:

Auger 0 ft. to 50 ft. Dia. 6½ in.
_____ ft. to _____ ft. Dia. _____ in.
_____ ft. to _____ ft. Dia. _____ in.

Drilling Fluid Used: Yes X No Type: _____

Sampler Hammer: Weight 140 lbs.

Casing Hammer: Weight _____ lbs.

Drop 30 in.

Drop _____ in.

Rock Core Diameter _____ in. Type core barrel/bit: _____

Date/Time Drilling Started: 1/21/87 Completed: 1/22/87

Down Time: 0 hrs. Cause(s) _____

Log Summary: Soil: 0-10': SP Mix. of F-C Sand, trace silt and gravel

10-28': GP Mix. of gravel and sand

Rock: _____

No. Samples: Split Spoon _____ Other: _____

Undisturbed: _____

No. Permeability Tests: Constant Head _____ Pressure _____

Falling Head _____ Other: _____

No. and Type of Other Tests: _____

Piezometer Installation:

Pipe: Type: Sched 40 PVC Dia. 2" Depth: From 15 ft. to 0 ft.

Screen: Type: Slot 10 PVC Dia. 2" Depth: From 25 ft. to 15 ft.

Filter Material: Type: Coarse Sand Depth: From 28 ft. to 12 ft.

Seal Material: Type: Bentonite Pell. Depth: From 12 ft. to 10 ft.

Cement/Bentonite Depth: From 10 ft. to 2 ft.

Concrete Depth: From 2 ft. to 0 ft.

Remarks: MW-1 S and D are a well nest. Soil data was used from
MW-1 D boring log.

Inspector R. Barbour

GRB

Job No.: _____

Boring: MW - 1D

Summary of Drilling and Sampling Information

Client: Spectrum Finishing Corporation Project: Phase II Inactive Hazardous Waste Inv.

Rig: Acker 82 Site: 50 Dale St., Babylon

Contractor: Empire Soils Investigation, Inc. Driller: Paul Keeney

Drilling Method: _____
_____ Auger _____ 0 ft. to 50 ft. Dia. 6 $\frac{1}{4}$ in.
_____ ft. to _____ ft. Dia. _____ in.
_____ ft. to _____ ft. Dia. _____ in.

Drilling Fluid Used: Yes x No Type: _____

Sampler Hammer: Weight 140 lbs. Casing Hammer: Weight _____ lbs.

Drop 30 in. Drop _____ in.

Rock Core Diameter _____ in. Type core barrel/bit: _____

Date/Time Drilling Started: 1/21/87 Completed: 1/22/87

Down Time: 0 hrs. Cause(s) _____

Log Summary: Soil: 0-10': SP Mix. of F-C sand, trace silt and fine gravel
10-52": GP Mix of gravel and sand

Rock: _____

No. Samples: Split Spoon 11 Other: _____

Undisturbed: 0 _____

No. Permeability Tests: Constant Head 1 Pressure _____

Falling Head 0 Other: _____

No. and Type of Other Tests: _____

Piezometer Installation:

Pipe: Type: Sched. 40 PVC Dia. 2 Depth: From 40 ft. to 0 ft.

Screen: Type: Slot 10, PVC Dia. 2 Depth: From 50 ft. to 40 ft.

Filter Material: Type: Coarse Sand Depth: From 50 ft. to 38 ft.

Seal Material: Type: Bentonite Pell. Depth: From 38 ft. to 28 ft.

Coarse Sand Depth: From 28 ft. to 12 ft.

Bentonite Pell. Depth: From 12 ft. to 10 ft.

Remarks: Cement/Bentonite Slurry 10 2

Concrete 2 0

Inspector R. Barbour

BORING LOG

Sheet 1 of 2

PROJECT: Spectrum Phase II Inv. PROJECT NO. BORING NO. MW-1S&D
 Location: Babylon, N.Y. Coord: Ground Elev:
 Contractor: Empire Soils Inv. Date Started: 1/21/87 G.W.L. Hour: Date:
 Inspector: R. Barbour Date Completed: 1/22/87 G.W.L. Hour: Date:

Notes:

Depth Fl.	Elev. Fl.	Sample Type & No.	Test Type & No.	Blows			Recovery %	ROD %	Drilling Rate Min./Fl.	Graphic Symbol	Description and Remarks
				Casing Per Fl.	Sampler						
					6"	6"					
0		SS-1		2	3	14"				SP: Mixtures of fine to coarse sand with traces of silt and fine gravel. Grass and roots.	
			7	4							
5		SS-2		7	13	15"				SP: Mixtures of fine to very coarse sand with little fine gravel, trace silt.	
			20	23							
10		SS-3		8	13	10"				GP: Mixtures of sand and fine to medium gravel, trace silt.	
			27	41							
15		SS-4		11	30	12"				GP: Mixtures of fine to coarse gravel and very coarse sand. Groundwater @ 18 feet.	
			36	32							
20		SS-5	CH-1		6	17	8"				GP: Mixtures of fine to coarse gravel and very coarse sand.
				20	20						
25		SS-6		3	10	7½"				GP: Mixtures of fine to coarse gravel and very coarse sand.	
			16	17							
30		SS-7		2	2	7"				GP: Mixtures of fine to coarse gravel and very coarse sand.	
			9	13							
35		SS-8		2	9	3"				GP: Mixtures of fine to coarse gravel and very coarse sand.	
			15	16							
40											

I.D. Casing	6 1/4	Wgt. Hammer on Casing		Material Notations
I.D. Spoon	2	Wgt. Hammer on Spoon	140 lbs.	
Type Core Drill		Drop Hammer on Casing		
Core Dia.		Drop Hammer on Spoon	30"	GRB Environmental Services, Inc. Consulting Environmental Engineers and Scientists
Sample & Test Notations	SS=Split Spoon			
	CH=Constant Head Test			

BORING LOG

Sheet 2 of 2

PROJECT: Spectrum Phase II Inv.

PROJECT NO.

BORING NO. MW-1S&D

Location: Babylon, N.Y.

Coord:

Ground Elev:

Contractor: Empire Soils Inv. Date Started: 1/21/87 G.W.L.

Hour: Date:

Inspector: R. Barbour Date Completed: 1/22/87 G.W.L.

Hour: Date:

Notes:

Depth Fl.	Elev. Fl.	Sample Type & No.	Test Type & No.	Blows			Recovery %	ROD %	Drilling Rate Min./Fl.	Graphic Symbol	Description and Remarks
				Casing	Sampler						
				Per Ft.	6"	6"					
4 0		SS-9		2	8	6"					GP: Mixtures of fine to coarse gravel and very coarse sand.
				15	17						
45		SS-10		-	-	12"					Rods fell. GP: Mixtures of fine to coarse gravel and very coarse sand.
				14	16						
50		SS-11		4	8	15"					SP: Mixtures of fine to very coarse sand with little fine gravel, trace silt. Bottom of boring = 52 feet.
				10	10						
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		GRB Environmental Services, Inc. Consulting Environmental Engineers and Scientists

GRB

Job No.: _____

Boring: MW-2S

Summary of Drilling and Sampling Information

Client: Spectrum Finishing Corporation

Phase II Inactive
Project: Hazardous Waste Inv.

Rig: Acker 82

Site: 50 Dale St. Babylon, NY

Contractor: Empire Soils Investigation, Inc. Driller: Paul Keeney

Drilling Method:

Auger (Hollow Stem) 0 ft. to 50 ft. Dia. 6 1/4 ID in.
____ ft. to ____ ft. Dia. ____ in.
____ ft. to ____ ft. Dia. ____ in.

Drilling Fluid Used: Yes ☒ No Type: _____

Sampler Hammer: Weight 140 lbs.

Casing Hammer: Weight _____ lbs.

Drop 30 in.

Drop _____ in.

Rock Core Diameter _____ in. Type core barrel/bit: _____

Date/Time Drilling Started: 1/23/87 Completed: 1/23/87

Down Time: 0 hrs. Cause(s) _____

Log Summary: Soil: 0-10': SP Mix of sand, trace gravel and silt

10-26': GP Mix of gravel and sand, trace silt

Rock: _____

No. Samples: Split Spoon _____ Other: _____

Undisturbed: _____

No. Permeability Tests: Constant Head _____ Pressure _____

Falling Head _____ Other: _____

No. and Type of Other Tests: _____

Piezometer Installation:

Pipe: Type: Sched 40, PVC Dia. 2" Depth: From 14 ft. to 0 ft.

Screen: Type: Slot 10 PVC Dia. 2" Depth: From 24 ft. to 14 ft.

Filter Material: Type: Coarse Sand Depth: From 26 ft. to 12 ft.

Seal Material: Type: Bentonite Pell. Depth: From 12 ft. to 10 ft.

Cement/Bentonite Depth: From 10 ft. to 2 ft.

Concrete Depth: From 2 ft. to 0 ft.

Remarks: MW-2SD are a well nest. Soil data was used from

MW-2D boring log.

Inspector R. Barbour

GRB

Job No.: _____

Boring: MW- 2D

Summary of Drilling and Sampling Information

Client: Spectrum Finishing Corporation

Phase II Inactive
Project: Hazardous Waste Inv.

Rig: Acker 82

Site: 50 Dale St, Babylon, NY

Contractor: Empire Soils Investigation, Inc.

Driller: Paul Keeney

Drilling Method:

Auger (hollow stem)

0 ft. to 50 ft. Dia. 6 1/4 ID in.

 ft. to ft. Dia. in.

 ft. to ft. Dia. in.

Drilling Fluid Used: Yes ☒ No Type:

Sampler Hammer: Weight 140 lbs.

Casing Hammer: Weight lbs.

Drop 30 in.

Drop in.

Rock Core Diameter in. Type core barrel/bit:

Date/Time Drilling Started: 1/23/87

Completed: 1/23/87

Down Time: 0 hrs.

Cause(s)

Log Summary: Soil: 0-10': SP Mix of sand, trace gravel and silt

10-46': GP Mix of gravel and sand, trace silt

46-52': SP Mix of fine to medium sand, trace silt

No. Samples: Split Spoon 11

Other:

Undisturbed: 0

No. Permeability Tests: Constant Head 0

Pressure

Falling Head 0

Other:

No. and Type of Other Tests:

Piezometer Installation:

Pipe: Type: Sched 40, PVC Dia. 2" Depth: From 40 ft. to 0 ft.

Screen: Type: Slot 10, PVC Dia. 2" Depth: From 50 ft. to 40 ft.

Filter Material: Type: Coarse Sand Depth: From 50 ft. to 38 ft.

Seal Material: Type: Bentonite Pell. Depth: From 38 ft. to 26 ft.

Coarse Sand Depth: From 26 ft. to 12 ft.

Bentonite Pell. Depth: From 12 ft. to 10 ft.

Remarks: Cement/Bentonite 10 ft. 2 ft.

Concrete 2 ft. 0 ft.

Inspector R. Barbour

BORING LOG

Sheet 1 of 2

PROJECT: Spectrum Phase II Inv. PROJECT NO. BORING NO. MW-2S,D
 Location: Babylon, N.Y. Coord: Ground Elev:
 Contractor: Empire Soils Inv. Date Started: 1/23/87 G.W.L. Hour: Date:
 Inspector: R. Barbour Date Completed: 1/23/87 G.W.L. Hour: Date:

Notes:

Notes:

Depth Fl.	Elev. Fl.	Sample Type & No.	Test Type & No.	Blows			Recovery %	ROD %	Drilling Rate Min./Fl.	Graphic Symbol	Description and Remarks
				Casing	Sampler						
				Per Fl.	6"	6"					
0		SS-1		4	5	16"					SP-Mixtures of fine to coarse sand with traces fine to medium gravel and silt.
				6	6						
5		SS-2			8	21	12"				SP-Mixtures of fine to coarse sand with some fine to medium gravel, trace silt.
					12	18					
10		SS-3			5	24	12"				GP-Mixtures of fine to coarse gravel and sand, trace silt.
					31	35					
15		SS-4			10	11	7 1/4"				GP-Mixtures of fine to coarse gravel and sand, trace silt.
					24	27					
20		SS-5			5	10	9"				GP-Mixtures of fine to coarse gravel and sand, trace silt.
					12	13					
25		SS-6			2	6	6"				GP- Mixtures of fine to medium gravel and sand, trace silt.
					7	8					
30		SS-7			5	7	3"				GP- Mixtures of fine to coarse gravel and sand, trace silt.
					9	10					
35		SS-8			2	4	7"				GP- Mixtures of fine to medium gravel and sand, trace silt.
					8	12					
40											

I.D. Casing		Wgt. Hammer on Casing	Material Notations
I.D. Spoon		Wgt. Hammer on Spoon	
Type Core Drill		Drop Hammer on Casing	
Core Dia.		Drop Hammer on Spoon	
Sample & Test Notations			GRB Environmental Services, Inc. Consulting Environmental Engineers and Scientists

Sheet 2 of 2

Notes:

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		GRB Environmental Services, Inc. Consulting Environmental Engineers and Scientists

Job No.:

Boring: MW-3S

Summary of Drilling and Sampling Information

Client: Spectrum Finishing Corp.

Project: Phase II Investigation

Rig: Acker 82

Site: 50 Dale St. Babylon, N.Y.

Contractor: Empire Soils Inv.

Driller: Paul Kenney-Empire

Drilling Method:

Auger- $6\frac{1}{4}$ I.D.

0 ft. to 50 ft. Dia. $6\frac{1}{4}$ in.

ft. to ft. Dia. in.

ft. to ft. Dia. in.

Drilling Fluid Used: Yes X No Type: _____

Sampler Hammer: Weight 140 lbs.

Casing Hammer: Weight _____ lbs.

Drop 30 in.

Drop in.

Rock Core Diameter _____ in. Type core barrel/bit: _____

Date/Time Drilling Started: 1/26/87- 1200 hr. Completed: 1/27/87- 1700 hr.

Down Time: _____ hrs. Cause(s) _____

Log Summary: Soil: 0'- 50' SP-GP Brown sand and gravel

Rock:

No. Samples: Split Spoon 11

Other: _____

Undisturbed: _____

No. Permeability Tests: Constant Head _____

Pressure _____

Falling Head _____

Other: _____

No. and Type of Other Tests: _____

Piezometer Installation:

Pipe: Type: SCH 40 PVC Dia. 2" Depth: From 0 ft. to 14.2 ft.

Screen: Type: 0.010 slot PVC Dia. 2" Depth: From 14.2 ft. to 24.2 ft.

Filter Material: Type: #1 sand Depth: From 28 ft. to 12 ft.

Seal Material: Type: Bentonite pellet Depth: From 12 ft. to 10 ft.

Cement Grout Depth: From 10 ft. to 0 ft.

Depth: From _____ ft. to _____ ft.

Remarks: _____

Inspector T. Doriski

GRB

Job No.: _____

Boring: MW-3D

Summary of Drilling and Sampling Information

Client: Spectrum Finishing Corp.

Project: Phase II Inv.

Rig: Acker 82

Site: 50 Dale St. Babylon, N.Y.

Contractor: Empire Soils Inv.

Driller: Paul Kenney- Empire

Drilling Method:

Auger- 6 $\frac{1}{4}$ I.D.

0 ft. to 50 ft. Dia. 6 $\frac{1}{4}$ in.

 ft. to ft. Dia. in.

 ft. to ft. Dia. in.

Drilling Fluid Used: Yes ☒ No Type: _____

Sampler Hammer: Weight 140 lbs.

Casing Hammer: Weight lbs.

Drop 30 in.

Drop in.

Rock Core Diameter in. Type core barrel/bit: _____

Date/Time Drilling Started: 1/26/87- 1200 hr. Completed: 1/27/87- 1700 hr.

Down Time: hrs. Cause(s)

Log Summary: Soil: 0'-50' SP-GP Brown sand and gravel

Rock: _____

No. Samples: Split Spoon 11 Other: _____

Undisturbed: _____

No. Permeability Tests: Constant Head _____ Pressure _____

Falling Head _____ Other: _____

No. and Type of Other Tests: _____

Piezometer Installation:

Pipe: Type: SCH 40 PVC Dia. 2" Depth: From 0 ft. to 39.4 ft.

Screen: Type: 0.010 slot PVC Dia. 2" Depth: From 39.4 ft. to 49.4 ft.

Filter Material: Type: #1 sand Depth: From 50 ft. to 38 ft.

Seal Material: Type: Bentonite pellet Depth: From 38 ft. to 28 ft.

#1 sand Depth: From 28 ft. to 12 ft.

Bentonite pellets Depth: From 12 ft. to 10 ft.

Cement Grout From 10 ft. to 0 ft.

Remarks: _____

Inspector T. Doriski

BORING LOG

Sheet 1 of 2

PROJECT: Spectrum Phase II Inv. PROJECT NO. BORING NO. MW-3S.D
 Location: Babylon, N.Y. Coord: Ground Elev:
 Contractor: Empire Soils Inv. Date Started: 1/26/87 G.W.L 18.81 Hour: 1500 Date: 1/27
 Inspector: T. Doriski Date Completed: 1/27/87 G.W.L 18.83 Hour: 1500 Date: 1/27

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows			Recovery %	ROD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
				Casing Per Ft.	Sampler						
					6" 6"	6" 6"					
0		SS-1		4	4	15"					SP- Fine to coarse sand with some silt, some fine gravel. Top 4" dark brown topsoil roots and grass, c
				5	6						
5		SS-2		7	14	15"					SP- Fine to coarse sand, trace silt, little gravel. Light brown, dry
				16	24						
10		SS-3		8	14	12"					SP- Fine to very coarse sand, some fine gravel. Tan to light brown. A one inch layer of fine gravel orange stained, dry.
				17	22						
15		SS-4		5	11	8"					GP-SP 50% Fine to coarse s 50% fine to coarse gravel Tan to brown . Slightly moist.
				17	21						
20		SS-5		4	10	7"					GP-SP 60% Fine to very coarse sand. 40% fine to medium gravel. Light brow wet.
				13	13						
25		SS-6		8	12	5"					GP-SP 60% Fine to very coarse sand. 40% fine to medium gravel. Light brow wet.
				14	13						
30		SS-7		2	7						GP-SP 60% Fine to very coarse sand. 40% fine to medium gravel. Light brow wet.
				8	8						
35		SS-8		4	8						GP-SP 60% Fine to very coarse sand. 40% fine to medium gravel. Light brow wet.
				10	14						
40											

I.D. Casing	6 1/4"	Wgt. Hammer on Casing		Material Notations
I.D. Spoon	2"	Wgt. Hammer on Spoon	140 lbs	
Type Core Drill		Drop Hammer on Casing		
Core Dia.		Drop Hammer on Spoon	30"	
Sample & Test Notations	SS- split spoon			GRB Environmental Services, Inc. Consulting Environmental Engineers and Scientists

BORING LOG

Sheet 2 of 2

PROJECT: Spectrum Phase II Inv. PROJECT NO. BORING NO. MW-3S, D
 Location: Babylon, N.Y. Coord: Ground Elev:
 Contractor: Empire Soils Inv. Date Started: 1/26/87 G.W. 18.81 Hour: 1500 Date: 1/27/87
 Inspector: T. Doriski Date Completed: 1/27/87 G.W.L. 18.83 Hour: 1500 Date: 1/27/87

Notes:

Notes.

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows			Recovery %	ROD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks								
				Casing Per Ft.	Sampler														
					6" 6"	6" 6"													
4 0		SS-9		4	7	0													
	8			10															
4 5		SS-10		3	10	6"					GP- Mixtures of medium to coarse sand and fine to medium gravel, trace fine sand; brown; wet.								
	16			16															
5 0		SS-11		4	9	6"					GP- Mixtures of medium to coarse sand and fine to medium gravel, trace fine sand; brown; wet.								
	16			16															
5																			
0																			
5																			
0																			
5																			
0																			
5																			
0																			

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		GRB Environmental Services, Inc. Consulting Environmental Engineers and Scientists

GRB

Job No.: _____

Boring: MW-4S

Summary of Drilling and Sampling Information

Client: Spectrum Finishing Corp. Project: Phase II Inv.
Rig: Acker 82 Site: 50 Dale St. Babylon, N.
Contractor: Empire Soils Inv. Driller: Paul Kenney

Drilling Method:

Auger- 6 $\frac{1}{4}$ " I.D. 0 ft. to 50 ft. Dia. 6 $\frac{1}{4}$ in.
_____ ft. to _____ ft. Dia. _____ in.
_____ ft. to _____ ft. Dia. _____ in.

Drilling Fluid Used: Yes X No Type: _____

Sampler Hammer: Weight 140 lbs.

Casing Hammer: Weight _____ lbs.

Drop 30 in.

Drop _____ in.

Rock Core Diameter _____ in. Type core barrel/bit: _____

Date/Time Drilling Started: 1/28/87-0900 hr. Completed: 1/28/87- 1500 hr.

Down Time: _____ hrs. Cause(s) _____

Log Summary: Soil: 0'- 15' SP Fine to coarse sand with some silt
15-50' GP Fine to coarse gravel and F-C sand
50-52' SP Fine to coarse sand, some silt and fine gravel

No. Samples: Split Spoon 11 Other: _____

Undisturbed: _____

No. Permeability Tests: Constant Head _____ Pressure _____

Falling Head _____ Other: _____

No. and Type of Other Tests: _____

Piezometer Installation:

Pipe: Type: Sch 40 PVC Dia. 2" Depth: From 0 ft. to 14.1 ft.

Screen: Type: 0.010 slot PVC Dia. 2" Depth: From 14.1 ft. to 24.1 ft.

Filter Material: Type: #1 sand Depth: From 28 ft. to 12 ft.

Seal Material: Type: Bentonite Pellets Depth: From 12 ft. to 10 ft.

Cement Grout Depth: From 10 ft. to 0 ft.

Depth: From _____ ft. to _____ ft.

Remarks: _____

Inspector T. Doriski

GRB

Job No.: _____

Boring: MW-4D

Summary of Drilling and Sampling Information

Client: Spectrum Finishing Corp.

Project: Phase II Inv.

Rig: Acker 82

Site: 50 Dale St., Babylon, N

Contractor: Empire Soils Inv.

Driller: Paul Kenney

Drilling Method:

Auger- 6 1/4" I.D. 0 ft. to 50 ft. Dia. 6 1/4 in.
____ ft. to ____ ft. Dia. ____ in.
____ ft. to ____ ft. Dia. ____ in.

Drilling Fluid Used: Yes X No Type: _____

Sampler Hammer: Weight 140 lbs.

Casing Hammer: Weight _____ lbs.

Drop 30 in.

Drop _____ in.

Rock Core Diameter _____ in. Type core barrel/bit: _____

Date/Time Drilling Started: 1/28/87- 0900 hr. Completed: 1/28/87- 1500 hr.

Down Time: _____ hrs. Cause(s) _____

Log Summary: Soil: 0-15' SP Fine to coarse sand with some silt
15-50' GP Fine to coarse gravel and fine to coarse sand
50-52' SP Fine to coarse sand, some silt and fine gravel

No. Samples: Split Spoon 11 Other: _____

Undisturbed: _____

No. Permeability Tests: Constant Head _____ Pressure _____

Falling Head _____ Other: _____

No. and Type of Other Tests: _____

Piezometer Installation:

Pipe: Type: SCH 40 PVC Dia. 2" Depth: From 0 ft. to 39.3 ft.

Screen: Type: 0.010 PVC Dia. 2" Depth: From 39.3 ft. to 49.3 ft.

Filter Material: Type: #1 sand Depth: From 50 ft. to 38 ft.

Seal Material: Type: Bentonite Pellets Depth: From 38 ft. to 28 ft.

#1 sand Depth: From 28 ft. to 12 ft.

Bentonite Pellets Depth: From 12 ft. to 10 ft.

Remarks: Cement grout From 10 ft. to 0 ft.

Inspector T. Doriski

BORING LOG

Sheet 1 of 2

PROJECT: Spectrum Phase II Inv. PROJECT NO. BORING NO. MW-4S,D
 Location: Babylon, N.Y. Coord: Ground Elev:
 Contractor: Empire Soils Inv. Date Started: 1/28/87 G.W.L18.12 Hour:1330 Date:1/29/87
 Inspector: T. Doriski Date Completed:1/28/87 G.W.L18.12 Hour:1335 Date:1/29/87

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows			Recovery %	ROD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
				Casing Per Ft.	Sampler						
					6"	6"					
0		SS-1			7	8	18"				SP- Fine to coarse sand with some silt, trace fine gravel. Dry, top 2" asphalt, middle 4" stones.
					9	9					
5		SS-2			7	8	13"				SP-GP Fine to very coarse sand and gravel. Orange-tan dry.
					8	9					
10		SS-3			5	20	14"				SP- Fine to very coarse sand some fine gravel. Light tan with slight orange stain dry.
					22	28					
15		SS-4			9	12	8"				GP- Fine to medium gravel and fine to coarse sand. Light tan, dry.
					20	22					
20		SS-5			4	12	6"				GP-SP 50% fine to coarse gravel. 50% fine to very coarse sand. Light tan, wet
					18	25					
25		SS-6			1	8	5"				GP-SP 50% fine to coarse gravel. 50% fine to very coarse sand. Light tan, wet
					13	12					
30		SS-7			4	8	0"				No Recovery
					8	8					
35		SS-8			2	4	5"				GP-SP 50% fine to coarse gravel. 50% fine to very coarse sand. Light tan, wet.
					8	11					
0											

I.D. Casing 6 1/4"	Wgt. Hammer on Casing	Material Notations
I.D. Spoon 2"	Wgt. Hammer on Spoon 140 lbs	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon 30"	
Sample & Test Notations	SS- Split Spoon	GRB Environmental Services, Inc. Consulting Environmental Engineers and Scientists

BORING LOG

Sheet 2 of 2

PROJECT: Spectrum Phase II Inv. PROJECT NO. BORING NO. MW-4S,D
 Location: Babylon, N.Y. Coord: Ground Elev:
 Contractor: Empire Soils Inv. Date Started: 1/28/87 G.W.L 18.12 Hour: 1330 Date: 1/29/87
 Inspector: T. Doriski Date Completed: 1/28/87 G.W.L 18.12 Hour: 1335 Date: 1/29/87

Notes:

Depth Fl.	Elev. Fl.	Sample Type & No.	Test Type & No.	Blows			Recovery %	ROD %	Drilling Rate Min./Fl.	Graphic Symbol	Description and Remarks
				Casing Per Ft.	Sampler 6" 6"						
40		SS-9			8 9		6"				GP-SP 50% fine to coarse gravel. 50% fine to very coarse sand. Light tan, wet.
					12 17						
45		SS-10			5 10		5"				GP-SP 50% fine to coarse gravel. 50% fine to very coarse sand. Tan, wet.
					14 15						
50		SS-11			8 26		5"				SP-70% fine to coarse sand, some silt. 30% fine gravel. Tan-brown, wet.
					35 25						
5											Bottom of Boring- 50 feet
0											
5											
0											
5											
0											

I.D. Casing 6 1/4"	Wgt. Hammer on Casing	Material Notations
I.D. Spoon 2"	Wgt. Hammer on Spoon 140lbs	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon 30"	
Sample & Test Notations	SS- Split Spoon	GRB Environmental Services, Inc. Consulting Environmental Engineers and Scientists

REFERENCE NO. 13

X

In the Matter of the Complaint

- against -

SPECTRUM FINISHING CORP. and
WILLIAM DE CHIRICO, VICE PRESIDENT
50 DALE STREET
WEST BABYLON, NEW YORK 11704

FINDING OF FACT
RECOMMENDATION
DECISION & ORDER

Respondents.

Under and Pursuant to the Public Health Law
of the State of New York, the Sanitary Code
of the County of Suffolk, and the Statutes
of the State of New York and the Laws and
Ordinances of the County of Suffolk.

X

To: Spectrum Finishing Corp. and
William DeChirico, Vice President
50 Dale Street
West Babylon, New York 11704

FINDING OF FACT

On the 11th day of May, 1982, at 1:39 p.m., an administrative hearing, pursuant to the Notice of Formal Hearing, was held regarding alleged violations of Article 12 of the Suffolk County Sanitary Code.

1. The respondent appeared with his attorney and pled not guilty.

DECISION

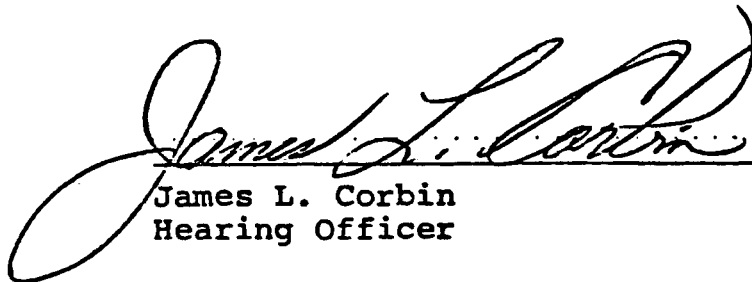
Based on the testimony presented, it is the opinion of this Hearing Officer that the defendant was in violation of Article 12 of the Suffolk County Sanitary Code on the dates specified in the Notice of Formal Hearing.


RECOMMENDATION

Pursuant to Article 2, Section 218(2), a fine of \$1,000.00 is imposed upon the respondent. Further, all violations listed on the Notice of Formal Hearing are to be corrected within the time frame stipulated by Mr. DeChirico, Vice President of Spectrum Finishing Corp. and entered into by counsel for the defendant as follows:

1. By June 25, 1982, respondent shall have abandoned the storm drain located approximately 15 feet northwest of the respondent's garage door, which is located on the east side of the respondent's facility. Respondent shall effectuate the abandonment of this storm drain by filling in the storm drain with clean soil to within approximately six feet so as to permit the installation of a non-porous prefabricated, concrete holding tank, which will be piped to a pre-existing storm drain

1. (cont'd.)
or storm drains located at the respondent's facility. This installation shall be performed in a workman-like manner so as to prevent the discharge of any rainwaters or other liquids into the ground located at the aforementioned storm drain which is being filled in.
2. By May 21, 1982, respondent shall have installed a solid, non-porous storm drain cover over the aforementioned storm drain to prevent accidental or intentional discharges into the storm drain prior to its abandonment and installation of a solid tank.
3. By June 11, 1982, respondent shall have submitted to this department applications pursuant to Article 12 of the Suffolk County Sanitary Code.
4. By May 19, 1982, in satisfaction of the department's violations alleged in this formal hearing, in addition to the aforementioned items contained in this stipulation and agreement, respondent shall submit to the department a check in the sum of \$1,000.00 civil penalty.


James L. Corbin
Hearing Officer


David Harris, M.D., M.P.H.
Commissioner

Dated: June 29, 1982
Hauppauge, New York

In the Matter of the Complaint

- against -

SPECTRUM FINISHING CORP. and
WILLIAM DE CHIRICO, VICE PRESIDENT
50 DALE STREET
WEST BABYLON, NEW YORK 11704

FINDING OF FACT
RECOMMENDATION
DECISION & ORDER

*copy to G.W.
3/3/83 P.D.*

Respondents.

Under and Pursuant to the Public Health Law
of the State of New York, the Sanitary Code
of the County of Suffolk, and the Statutes
of the State of New York and the Laws and
Ordinances of the County of Suffolk.

To: Spectrum Finishing Corp. and
William DeChirico, Vice President
50 Dale Street
West Babylon, New York 11704

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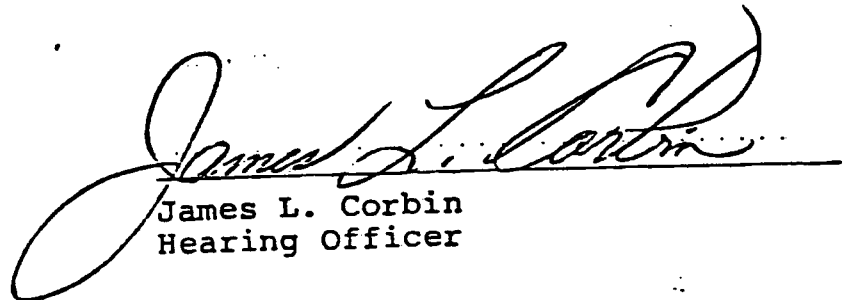
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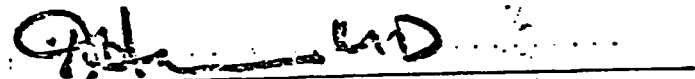
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Spectrum Finishing Corp. and
William DeChirico, Vice President

- 2 -

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4. By May 19, 1982, in satisfaction of the department's violations alleged in this formal hearing, in addition to the aforementioned items contained in this stipulation and agreement, respondent shall submit to the department a check in the sum of \$1,000.00 civil penalty.


James L. Corbin
Hearing Officer


David Harris, M.D., M.P.H.
Commissioner

Dated: June 29, 1982
Hauppauge, New York

file

Spectrum Finishing Corp.
METAL FINISHING

DALE STREET

BOX 327

BABYLON, N.Y. 11704

July 21, 1982

Suffolk County Dept. of Health

15 Horseblock Place

Farmingville, New York 11738

Att: Mr. Peter Akras

Dear Mr. Akras:

This letter is to orient you to some of the steps we will take in order to comply with Article 12, of the Suffolk County Sanitary Code.

① Berms will be built around all openings in the plating area, all doors, over-head doors and the retaining wall opening in plating shop, to comply with the code.

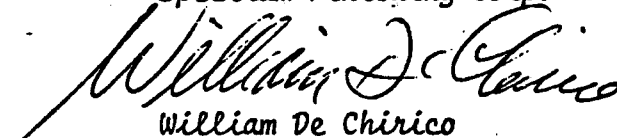
? ② The tanks have been checked for potential leaks and found sound.

③ We will paint the berms with epoxy to insure that there would be no erosion taking place on the concrete.

I will call you to find out if this is satisfactory. Then I will fill out and send in the appropriate applications, thank you.

Very Truly Yours,

Spectrum Finishing Corp.



William De Chirico

Vice President

WD/mw

REFERENCE NO. 14

SITE CODE: 152029

ANALYTICAL DATA AVAILABLE:

Air- Surface Water-X Groundwater-X Soil-X Sediment-

CONTRAVENTION OF STANDARDS:

Groundwater-X Drinking Water- Surface Water- Air-

LEGAL ACTION:

TYPE.: State- Federal-
STATUS: Negotiation in Progress- Order Signed- X

REMEDIAL ACTION:

Proposed- Under design- In Progress- Completed-
NATURE OF ACTION:

GEOTECHNICAL INFORMATION:

SOIL TYPE: Sand
GROUNDWATER DEPTH: 16 feet

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Groundwater has been contaminated at this site. Remediation of this site will be necessary.

ASSESSMENT OF HEALTH PROBLEMS:

On-site groundwater is contaminated with chromium, 1,1,1-trichloroethane, and trichloroethene above NYS drinking water standards. Public water supplies were made available to all water users in the area because of contamination associated with the Babylon Landfill 500 m to the east. A public water supply wellfield is located 2500 m downgradient of the site. However, no contamination has been detected with periodic sampling.

REFERENCE NO. 15

Hydrology of the Babylon-Islip Area Suffolk County Long Island, New York

Appendix 1.3-
1 of 5

By E. J. PLUHOWSKI and I. H. KANTROWITZ

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1768

*Prepared in cooperation with the Suffolk
County Board of Supervisors, Suffolk
County Water Authority, and the New
York State Water Resources Commission*



the development of the all-metal airplane created a need for metal-fabricating shops. The post-World War II boom in electronics and electrical equipment found Suffolk County well prepared for the new industry owing to its established aviation firms, and the presence of the required skilled personnel.

AGRICULTURE AND VEGETATION

Although the value of crops produced and marketed in Suffolk County ranks highest of all the counties in New York State, agricultural production in the Babylon-Islip area is relatively small. The soils in the southern and eastern parts of the area have been classified by Lounsberry and others (1928, p. 13) as Sassafra Sandy Loam and Dukes Loamy Sand. These soils are not as productive as the soils in the northern and eastern parts of the county. The Sassafra Loam soils in the northwestern and north-central parts of the area are fairly productive. Proximity of this area to metropolitan markets spurred the development of numerous truck farms. The major crops produced by these farms are tomatoes, cauliflower, corn, string beans, peas, and cucumbers. Intensive urbanization, however, has reduced farm acreage so sharply that only a few farms remained in 1961.

Extensive tracts of natural vegetation are limited principally to the northern and eastern parts of the area. Much of the hilly area of the Ronkonkoma terminal moraine is forested with well-developed stands of deciduous trees. Low moisture retention characterizes the sandy, well-drained soils of the eastern part of the area and thereby precludes extensive forest development. Stands of scrub oak or pitch pine are common here in conjunction with an undergrowth of huckleberry, sweetfern, and wintergreen.

GEOLOGY

The composition, thickness, and geologic history of the deposits underlying the Babylon-Islip area determine the water-bearing characteristics, and the lateral and vertical extent of aquifers and aquicludes that form the hydrologic environment. The stratigraphy of the geologic formations is known almost exclusively from well records and samples, as outcrops, especially those of Cretaceous age, are rare.

STRATIGRAPHY

The Babylon-Islip area is underlain by unconsolidated sediments of Cretaceous, Tertiary, and Quaternary age, which lie on crystalline bedrock of Precambrian or early Paleozoic(?) age (table 1 and pl. 1). Directly overlying the bedrock is the Raritan Formation of Cretaceous

member. Above the Raritan Formation is a thick sequence of deposits of late Cretaceous age which is in part, correlative with the Magothy Formation of New Jersey, but also includes some formations that are younger than the Magothy (Perlmutter and Crandell, 1959, p. 1066). Pending a more specific identification, these beds are referred to as the Magothy(?) Formation. Deposits of Quaternary, and possibly Tertiary age overlie the Cretaceous deposits. These consist, from oldest to youngest, of the Mannetto Gravel of doubtful Tertiary (Pliocene ?) age, the Gardiners Clay, and the upper Pleistocene and Recent deposits.

TABLE 1.—Summary of stratigraphy of the Babylon-Islip area

Era	Period	Epoch	Geologic unit	Remarks
Cenozoic	Quaternary	Recent	Recent deposits	Stream, beach, and marsh deposits; small areal extent.
		Pleistocene	Upper Pleistocene deposits	Till and outwash deposits of the Wisconsin glaciation.
			Gardiners Clay	Fossiliferous marine clay of probable Sangamon age.
	Tertiary(?)	Pliocene(?)	Mannetto Gravel	Formerly believed to be an outwash deposit but now regarded as a stream-terrace deposit; small areal extent.
Mesozoic	Cretaceous	Late Cretaceous	Magothy(?) Formation	Interbedded sand, silt, and clay.
			Raritan Formation	Dominantly clay but may contain some silt and sandy zones locally.
			Lloyd Sand Member	Sand, gravel, and interbedded clay and silt.
Precambrian and early Paleozoic(?)			Bedrock	Schist and gneiss containing some granitic intrusions.

THE BEDROCK

No wells in the Babylon-Islip area have reached bedrock. However, information obtained from wells in nearby parts of Long Island (Suter and others, 1949, p. 30-32, pls. 8 and 9) suggests that the bedrock in the area consists chiefly of schist and gneiss and contains some granitic intrusions. The bedrock is probably correlative in part with igneous and metamorphic rocks of Connecticut.

The bedrock surface dips southeastward at a rate of approximately 50 to 100 feet per mile. The altitude of the surface ranges from about 1,200 feet below sea level in the northwestern part of the area to about 1,800 feet below sea level in the extreme southeastern part. This bedrock surface represents the lower limit of the ground-water reservoir.

265

385

(Brice, Whitaker, and Sawyer, 1956, p. 32). Infiltration rates apparently depend chiefly on the interval between successive floodings, depth of water, and permeability of the basin surface. There are now more than 80 storm-water recharge basins in the Babylon-Islip area, and the number may be expected to increase as urbanization continues. The effectiveness of the basins as a means of recharging storm water to the ground-water reservoir from a suburban area is probably comparable to that of natural surface conditions prior to urbanization (Brice, Whitaker, and Sawyer, 1956, p. 2).

Public sanitary-sewer systems on Long Island discharge their effluent directly into tidewater. Because there are no such systems in the Babylon-Islip area (1961), theoretically all water withdrawn from the ground-water reservoir is returned to the ground. Two large sewage-leaching beds serve Pilgrim and Central Islip State Hospitals, and several smaller ones are at other institutions. The balance of domestic sewage is returned to the ground through cesspools. Water pumped for industrial purposes is usually returned through diffusion wells and cesspools. A small amount of industrial pumpage containing contaminants is discharged into tidewater to avoid pollution of ground-water supplies.

Artificial recharge in the Babylon-Islip area counters the effect of urbanization by restoring the natural rate of infiltration of precipitation through the use of recharge basins and by returning most of the water pumped.

Because it is not practical to measure directly the rate of recharge to the ground-water reservoir, recharge must be determined by indirect methods. An approximate value for recharge is obtained by subtracting evapotranspiration losses and direct runoff from precipitation. The recharge to the ground-water reservoir in the Babylon Islip area as determined by this method is:

	Approximate annual rate (inches)
Precipitation.....	46
Evapotranspiration.....	21
Direct runoff.....	1
Total water loss.....	22
Recharge to ground-water reservoir.....	24

A recharge rate of 24 inches per year is equivalent to 1.1 mgd (million gallons per day) per sq mi or an annual total of about 215 mgd for the Babylon-Islip area. The bulk of this recharge occurs during late fall, winter, and early spring, when evapotranspiration is at a minimum.

Verfahren



1

2

Overview

3

14.2%

% of summer
months & summer.

Termin

Summary:

5

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

INGRAM CORP.

Domestic supply cut:

Poster supports well

part of shopping

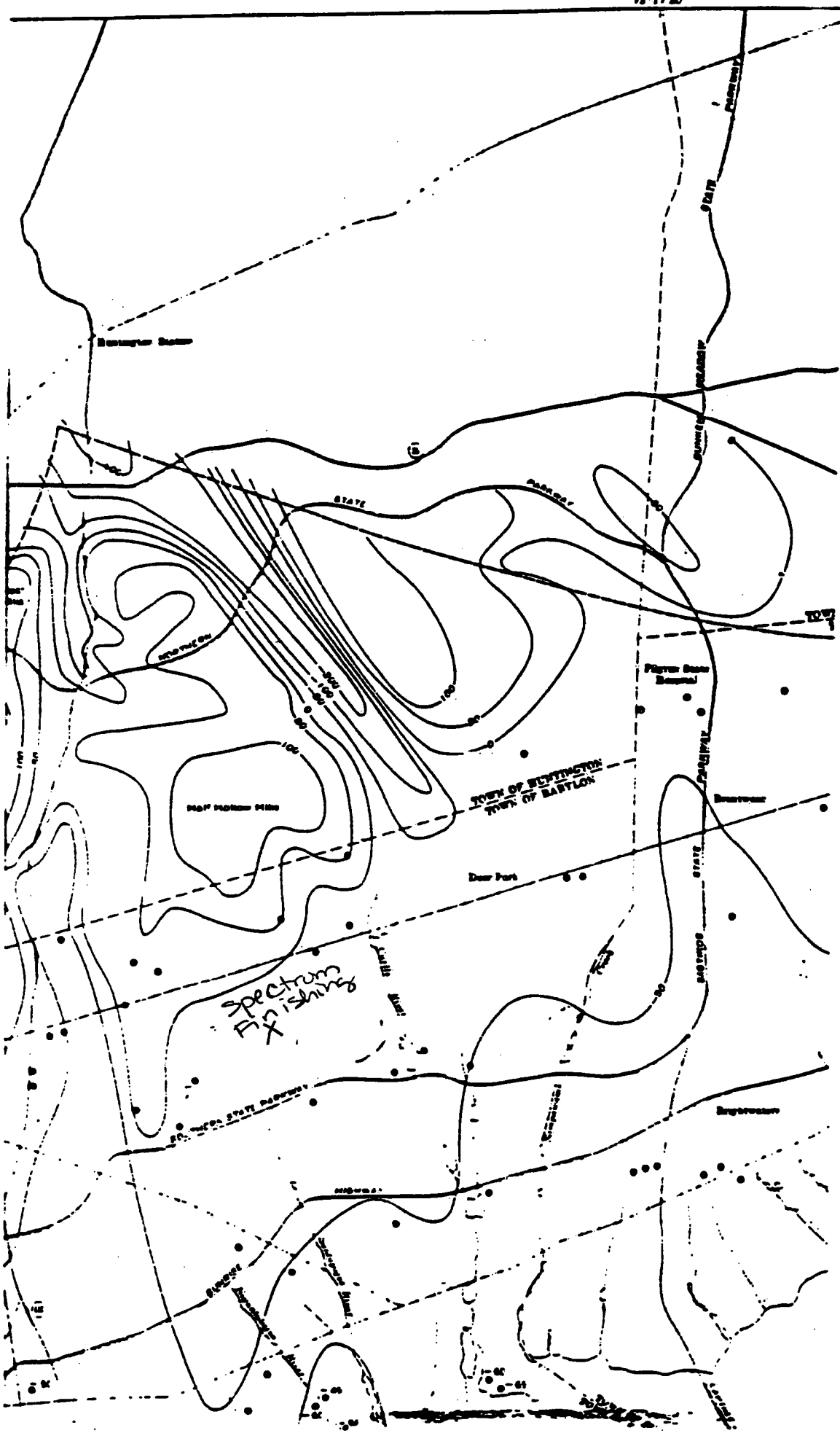
**MAP OF THE BABYLON-ISLIP AREA, SHOWING GENERALIZED SURFICIAL GEOLOGY, LOCATION OF WELLS,
FROM FIRE ISLAND STATE PARK TO BRENTWOOD, SUFFOLK COUNTY, NEW YORK**

Contours showing elevations in feet
 Dashed lines showing boundaries of
 Towns and Villages
 Solid lines showing roads
 Thin lines showing water courses

- 25 -

Scale of Miles
 0 1 2 3 4 5

MAP OF THE BABYLON-ISLIP AREA, SUFFOLK COUNTY, NEW YORK, SHOWING CONTOURS ON THE TOP OF THE MAGOTHY(?) FORMATION AND ALTITUDE OF THE TOP OF THE GARDINERS CLAY



REFERENCE NO. 16

**GEOLOGY OF THE "20-FOOT" CLAY AND GARDINERS CLAY IN SOUTHERN NASSAU AND
SOUTHWESTERN SUFFOLK COUNTIES, LONG ISLAND, NEW YORK**

By Thomas P. Doriski and Franceska Wilde-Katz

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 82-4056

This document was prepared by the U.S. Geological Survey under a contract with Suffolk County and Nassau County, New York pursuant to 40 CFR, Part 30 and Part 35, Sub. E of the Federal Water Pollution Control Act, Construction Grants. This project has been financed in part with Federal funds from the United States Environmental Protection Agency under Grant No. C-36-10365-04. The contents do not necessarily reflect the views and policies of the U.S. Environmental Protection Agency nor does the mention of trade names or commercial products constitute endorsement or recommendations for use.

Prepared in cooperation with the
NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS, and the
SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES



Syosset, New York

1983

Table 1.—Summary of stratigraphy and correlative hydrostratigraphy of deposits underlying southern Nassau and southwestern Suffolk Counties, New York

System	Series	Age	Stratigraphic Unit	Hydrostratigraphic Unit
QUATERNARY	Holocene	Postglacial	Holocene (recent) deposits	Upper glacial aquifer
	Pleistocene	Wisconsin (upper Pleistocene)	Upper Pleistocene deposits	
			"20-foot" clay	"20-foot" clay
			Upper Pleistocene deposits unconformity	Upper glacial aquifer
		Sangamon	Gardiners Clay unconformity	Gardiners Clay
	Pre-Sangamon (Illinoian or Kansan)	Jameco Gravel ¹	Jameco aquifer ¹	
Quaternary and Tertiary, undifferentiated	Pre-Sangamon to Post-Cretaceous, undifferentiated		Reworked Matawan-Magothy channel deposits	Upper glacial or Magothy aquifer
CRETACEOUS	Upper Cretaceous	unconformity		
		Monmouth Group unconformity		Monmouth greensand
		Matawan Group-Magothy Formation, undifferentiated unconformity		Magothy aquifer
		Raritan Formation	Unnamed clay member	Raritan confining unit
			Lloyd Sand Member	Lloyd aquifer
unconformity				
Precambrian			Bedrock	Relatively impermeable bedrock

¹Present in Nassau County only

Two other interpretations are that (1) all units were deposited, then eroded, by a glacial meltwater stream of Wisconsin age, or (2) the valley was formed during the Cretaceous, so that the Monmouth Group and Gardiners Clay overlying it contain corresponding valleys. In either case, the Gardiners Clay would be discontinuous and not function as a confining layer in this area.

Monmouth Group

The Monmouth Group is a marine deposit of Cretaceous age that occurs along the barrier islands primarily in Suffolk County. Its upper surface altitude ranges from -70 to -165 ft NGVD (pls. 3, 4); thickness ranges from 0 to 200 ft. The Monmouth Group disconformably overlies the Matawan Group-Magothy Formation and is disconformably overlain by the Gardiners Clay. The Monmouth Group is typically a greenish-black glauconitic and lignitic clay, silt, or clayey to silty sand. A more detailed lithologic description of the Monmouth Group is given in Jensen and Soren (1974).

Jameco Gravel

The Jameco Gravel, a stream deposit, is pre-Sangamon, possibly of Illinoian or Kansan age (Soren, 1978). It occurs primarily in Queens County but extends into the extreme southwestern part of Nassau County, where its upper surface altitude ranges from -80 to -140 ft NGVD (pls. 3, 4) and thickness ranges from 0 to 100 ft. It disconformably overlies the Matawan Group-Magothy Formation and is disconformably overlain by the Gardiners Clay. The Jameco Gravel is typically a dark brown and dark gray granule to cobble gravel. The depositional history and a more detailed lithologic description of the Jameco Gravel are given in Soren (1978).

Gardiners Clay

The Gardiners Clay is a marine deposit along the south shore of Long Island. In southern Nassau County and southwestern Suffolk County, its upper surface altitude ranges from -40 to -120 ft NGVD (pls. 3, 5); thickness ranges from 0 ft at the northern limit to 90 ft at the barrier islands (pls. 3, 6). The deposit disconformably overlies either the Matawan Group-Magothy Formation, the Monmouth Group, or the Jameco Gravel, depending on location, and is disconformably overlain by upper Pleistocene deposits.

The age of the Gardiners Clay exceeds 38,000 years, according to carbon-14 dating tests on oyster shells found in the unit at two localities in Nassau County (Swarzenski, 1963, p. 20). As a result of this dating, as well as the stratigraphic position of this unit, the Gardiners Clay has been considered to be of Sangamon age (Soren, 1971, p. 15).

The Gardiners Clay is typically grayish-green to gray and contains a few sand and silt beds, which generally make up less than 10 percent of the total thickness of the unit in a specific area. The mineral assemblage commonly contains glauconite, quartz, muscovite, biotite, pyroxene, amphibole, and a complete clay mineral suite of illite, chlorite, mixed-layer clays, and minor

kaolinite (Lonnie, 1982). The clay also contains diatoms, foraminifera, shell fragments of pelecypods and gastropods, and peat. A more detailed discussion of the Gardiners Clay is given in Perlmutter and Geraghty (1963, p. A32-A35).

The surface of the Gardiners Clay in plate 5 is a revision of the areal-extent maps by Perlmutter and Geraghty (1963, p. 33A) and Jensen and Soren (1974). The major difference between plate 5 and those maps is the improved delineation of the unit's absence in long, narrow north-south channels along the south shore (pls. 5, 6). These absences probably correspond to areas of erosion by glacial meltwater streams and areas of nondeposition. Although the Gardiners Clay is generally continuous along the south shore, these areas are delineated because of their hydrologic importance in influencing the ground-water flow patterns. Where the clay is absent, the upper aquifer has good hydraulic connection with the lower aquifer; where the clay is present, the upper aquifer has poor hydraulic connection with the lower aquifer. This discontinuity and other discrepancies between plates 5 and 6 and earlier maps were determined through the 1978-79 drilling program and the correlation of unpublished well and test-hole data.

The thickness of the Gardiners Clay (pl. 6) is hydrologically important because it largely controls the water-transmitting property of the clay. The thickness of the formation increases southward to the barrier islands. In some areas along the south shore, the lower several feet of the Gardiners Clay may contain a sand or gravel facies. These facies are included as part of the clay unit in the geologic isopach map (pl. 6) but are not represented in the Geological Survey's ground-water model developed by Reilly and others (written commun., 1981) because they are not confining.

"20-Foot" Clay

The "20-foot" clay is a marine deposit within the upper Pleistocene deposits near the south shore. Its upper surface altitude ranges from -20 to -40 ft NGVD (pls. 3, 7); thickness ranges from 0 ft at the northern limit to 30 ft at the barrier islands (pls. 3, 8). The unit overlies upper Pleistocene deposits that range in thickness from 2 to 40 ft and is overlain by upper Pleistocene deposits. The "20-foot" clay was probably deposited during an interstadial period in the Wisconsin glaciation (table 1). The upper Pleistocene deposits underlying the "20-foot" clay are generally a light brown, fine to medium-grained sand (although drillers' logs report some gravel), and are considered to be outwash deposits. The deposits that overlie the "20-foot" clay are also outwash but, in general, are brown, coarser grained, and contain more gravel. The "20-foot" clay directly overlies the Matawan Group-Magothy Formation or Gardiners Clay at several locations where the upper Pleistocene deposits have been removed by erosion. (See pl. 3, well N-5227 near Jones Inlet.)

The surface of the "20-foot" clay in plate 7 is revised from the areal-extent map by Perlmutter and Geraghty (1963, p. 33A) and shows the discontinuity of the clay layer (absences of the unit in narrow, north-south channels) in greater detail. Previous reports do not indicate the "20-foot" clay to extend into Suffolk County, but data obtained during the 1978-79 drilling program indicate it to be present on the barrier island in Suffolk County (pl. 7).

REFERENCE NO. 17

**LONG ISLAND WATER RESOURCES
BULLETIN NUMBER 1**

Ref No. =
17
(1-7)

**RESULTS OF SUBSURFACE EXPLORATION
IN THE MID-ISLAND AREA OF WESTERN SUFFOLK COUNTY,
LONG ISLAND, NEW YORK**

**BY
JULIAN SOREN
U. S. GEOLOGICAL SURVEY**

**WITH A SECTION ON
POTENTIAL DEVELOPMENT OF GROUNDWATER
IN THE MID-ISLAND AREA**

**BY
PHILIP COHEN
U. S. GEOLOGICAL SURVEY**

**PREPARED BY
U. S. GEOLOGICAL SURVEY
IN COOPERATION WITH
SUFFOLK COUNTY LEGISLATURE
SUFFOLK COUNTY WATER AUTHORITY**

**PUBLISHED BY
SUFFOLK COUNTY WATER AUTHORITY**

1971

UPPER CRETACEOUS SERIES

Raritan Formation

Lloyd Sand Member

The Lloyd Sand Member of the Raritan Formation comprises the Lloyd aquifer on Long Island. This unit consists mostly of beds and lenses of light- to medium-gray sand and gravelly sand, commonly containing small to large amounts of interstitial clay and silt, that are intercalated with beds and lenses of light- to dark-gray clay, silt, and clayey and silty sand.

Only two drill holes are known to have penetrated the Lloyd in the mid-island area. One hole partly penetrated the unit at the Pilgrim State Hospital, in Brentwood. The second hole, which is in the village of Lake Ronkonkoma, and which was one of the test holes drilled as part of this study, fully penetrated the unit. A log of the test hole describing lithology of the Lloyd is shown in table 1, S33379.

The surface of the Lloyd is roughly parallel to the bedrock surface. The Lloyd surface dips from an altitude of about 550 feet below sea level in the northwestern part of the area, to an altitude of about 1,250 feet below sea level in the southeastern part (pl. 2), and the unit's thickness ranges from about 260 feet to 360 feet from northwest to southeast, respectively. Plate 2 shows contours on the Lloyd surface. Plate 2 also shows contours on the bedrock surface; therefore, the Lloyd's thickness, in any part of the area, can be estimated by computing the local difference between the altitudes of the bedrock and Lloyd surfaces.

The Lloyd aquifer is moderately permeable. Its average horizontal permeability has been estimated by Lusczynski and Swarzenski (1966, p. 19), Isbister (1966, p. 20), and Soren (in press) to range between 400 and 500 gpd per sq ft (gallons per day per square foot) in Queens and Nassau Counties, west of the mid-island area. Warren and others (1968, p. 102) estimated the Lloyd's horizontal permeability to be 165 gpd per sq ft at the Brookhaven National Laboratory, about 12 miles east of the mid-island area. The section of Lloyd penetrated by the test well near Lake Ronkonkoma was fairly sandy and gravelly (table 1, S33379), and at this site the average horizontal permeability of the Lloyd probably is considerably more than 500 gpd per sq ft. Wells tapping the Lloyd in other parts of Long Island have been pumped at rates of as much as 1,600 gpm (gallons per minute), and the specific capacities of these wells (pumpage, in gallons per minute, divided by drawdown, in feet) have been reported to range from 3 to 40 gpm per foot of drawdown.

At present, there is no pumpage from the Lloyd aquifer in the mid-island area, mainly because of the great depth of the aquifer, and because more permeable aquifers are found at shallower depths. In addition to being at a greater depth, the water from the Lloyd commonly has undesirably high concentrations of iron.

Clay Member

The clay member of the Raritan Formation (commonly referred to as the Raritan clay) completely covers the underlying Lloyd aquifer in the mid-island area, and confines water in that aquifer. The Raritan clay consists mostly of beds and lenses of light- to dark-gray clay, silt, and clayey and silty fine sand (table 1). Thin to thick sandy beds commonly occur in the unit from place to place, but these beds do not have great lateral extent. Laminae and thin beds of lignite and pyrite and disseminated particles of these substances are common in the clay beds of the unit. The thickness of the Raritan clay increases to the southeast, and ranges from about 150 feet in the northwestern part of the mid-island area to about 200 feet in the southeastern part.

The surface of the Raritan clay is roughly parallel to that of the underlying Lloyd Sand Member. The altitude of the surface of the Raritan clay ranges from about 300 feet below sea level in the northwestern part of the mid-island area, to about 1,050 feet below sea level in the southeastern part (pl. 3).

Matawan Group-Magothy Formation, Undifferentiated

The Matawan Group-Magothy Formation, undifferentiated, comprises the Magothy aquifer of Long Island. Deposits in this unit consist of beds and lenses of light-gray fine to coarse sand, containing traces to large amounts of interstitial clay and silt, intercalated with thin to thick beds and lenses of light- to dark-gray clay, silt, and clayey and silty sand (table 1). The clay and silt beds commonly contain laminae and thin beds of lignite. Disseminated lignite and pyrite also are common in the sand beds of the aquifer. Gravelly coarse sand is commonly found in the basal part of the aquifer. This coarse zone ranges in thickness from 100 to 150 feet west of the mid-island area to 150 to 200 feet in the mid-island area. The basal zone also commonly contains abundant interstitial clay and silt and many thin to thick beds and lenses of clay, silt, and clayey and silty sand.

The surface of the Magothy aquifer (pl. 4) is not planar as are the surfaces of the underlying units. The Magothy surface was deeply eroded during Tertiary time, and probably was considerably eroded in Pleistocene time. Consequently, the depth to the Magothy aquifer and the aquifer's thickness cannot be predicted as accurately as the depths and thicknesses of the underlying units. Many control points in addition to those already known are needed to accurately map the upper surface of the Magothy aquifer.

The highly irregular character of the surface of the Magothy aquifer is shown in plate 4. The upper surface of the aquifer ranges in altitude from as high as about 200 feet above sea level to as low as about 500 feet below sea level. The Magothy was completely removed by erosion in a buried valley near the South Huntington area, and in that area upper Pleistocene deposits lie directly on the Raritan clay. This buried valley was called the "Huntington buried valley" by Lubke (1964, pl. 3), and as mapped by Lubke, the valley extended about 2-1/2 miles south of the Northern State Parkway.

source of the rock materials in the outwash deposits is manifold. As the glaciers moved southward to Long Island, they plucked the bedrock and soils of the surfaces they slid over. Rock materials were incorporated into the ice in contact zones and were also pushed along the glacial front. As the ice melted in late Pleistocene time, the various rock materials were carried away by broad coalescing streams and sheets of water. Consequently, the outwash deposits are stratified, and because of the varied materials carried by the glacier, these deposits consist of a heterogeneous suite of rock types. The great diversity of rock and mineral suites in the Pleistocene deposits, along with the chemically unstable (easily decomposed) rocks and minerals, commonly facilitates differentiation of glacial from the Cretaceous deposits on Long Island.

Outwash deposits underlie the plain in the mid-island area south of the Ronkonkoma terminal moraine, where the major source of glacial deposition was material from the Ronkonkoma ice advance. A readvance of the glacial front followed recession of the Ronkonkoma ice front and resulted in the formation of the Harbor Hill terminal moraine. Lakes were formed in depressions and valleys between the Ronkonkoma and Harbor Hill terminal moraines, and clayey materials were deposited in these lakes. The inter-morainal areas also contain recessional deposits of outwash and ground moraine (see the following section, "Ground-Moraine Deposits") from the Ronkonkoma and Harbor Hill deglaciations, and these materials buried the clayey lake deposits.

The outwash deposits are thickest in the buried valleys and thinnest where the Cretaceous surface is closest to land surface (pl. 5). These deposits generally extend below the water table, and are a major source of ground water. Outwash deposits comprise most of the so-called upper glacial aquifer of Long Island, and because these deposits of sand and gravel contain virtually no interstitial clay and silt, the upper glacial aquifer is the most permeable aquifer on Long Island. The estimated average horizontal permeability of the outwash deposits is about 1,000 to 1,500 gpd per sq ft (Luszczynski and Swarzenski, 1966, p. 17; and Soren, in press). Warren and others (1968, p. 75) computed the horizontal permeability of outwash to be about 1,300 gpd per sq ft at the Brookhaven National Laboratory, east of the mid-island area. A horizontal permeability for outwash as high as about 2,500 gpd per sq ft has been reported in Nassau County, west of the project area (Isbister, 1966, p. 29).

Public-supply and other high-capacity wells screened in glacial outwash on Long Island have yielded as much as 1,700 gpm, and reported specific capacities of such wells range from less than 10 gpm per foot of drawdown to as much as about 200 gpm per foot of drawdown; however, the specific capacities range mostly from 50 to 100 gpm per foot of drawdown. (See section "Yields of Individual Wells.")

the shorelines, the direction of flow is reversed, and ground-water movement is upward from the deeper aquifers toward the surface. Thus, because of the character of the flow system, under natural conditions virtually all the recharge to the Magothy and Lloyd aquifers in western Suffolk County originated in the mid-island area, and all of that recharge ultimately discharged from the ground-water system near the shorelines.

The movement of ground water through Long Island's aquifers in the horizontal direction is generally more rapid than movement in the vertical direction because of the occurrence of interbedded fine- and coarse-grained layers, and because the largest dimensions of unevenly shaped particles in the individual layers tend to be oriented horizontally. Approximate rates of ground-water movement can be computed from hydraulic gradients and estimated coefficients of permeability and porosities of the aquifers. In 1968, water in the upper glacial aquifers in the project area was moving horizontally at rates from less than 0.5 foot per day at points distant from centers of pumping, to hundreds of feet per day near the screens of pumping wells. At the same time, water in the Magothy aquifer was moving horizontally at rates from less than 0.2 foot per day at points distant from pumping, to hundreds of feet per day near the screens of pumping wells.

HYDRAULIC INTERCONNECTION OF AQUIFERS

The aquifers of Long Island are hydraulically interconnected. Layers of clay and silt within an aquifer or between aquifers serve to confine water below them, but they do not completely prevent the vertical movement of water through them. Ground water moves downward readily through coarse outwash deposits in the upper glacial aquifer. Vertical movement of water through the Magothy aquifer is impeded by beds and lenses of clay and silt. Because the clay and silt strata in the Magothy are not continuous, some water may move around lenses of this material in addition to moving slowly through the fine-grained strata.

The contact between the upper glacial and Magothy aquifers is not regular either in attitude or in composition of the contact surfaces. Glacial deposits in buried valleys are in lateral contact with truncated sandy beds in the Magothy. In the buried valleys water can laterally enter the Magothy at great depth directly from the glacial deposits, rather than the water having to move vertically to the same depth through less permeable Magothy beds. In the Huntington buried valley, glacial deposits extend completely through the Magothy aquifer to the underlying Raritan clay. (See plate 4.) In addition to the good hydraulic continuity between the upper glacial and Magothy aquifers in the buried valleys, good hydraulic continuity occurs between the aquifers outside the buried valleys where glacial sand and gravel deposits lie directly on Magothy sand beds. Thus, a fairly good hydraulic connection exists between the upper glacial and Magothy aquifers over large parts of the mid-island area, and the configuration of the piezometric surface of the Magothy aquifer is generally similar to that of the water table. However, in the mid-island area hydraulic heads in the Magothy are lower than those in the upper glacial aquifer because of the downward component of ground-water movement in the area.

The thick areally persistent Raritan clay that lies between the Magothy and Lloyd aquifers impedes but does not prevent downward movement of ground water into the Lloyd aquifer, and water in the Lloyd is tightly confined between the Raritan clay and bedrock. Downward leakage into the bedrock is negligible.

Figures 2 and 3 show hydrographs of wells screened in the upper glacial aquifer and the Magothy aquifer at the test-drilling sites in Brentwood and Hauppauge. At both sites, the heads in the deepest wells in the Magothy aquifer are about 2.5 to 3 feet lower than the heads in the shallowest wells in the upper glacial aquifer. The loss of head downward reflects the downward movement of ground water in the mid-island area. The hydrographs in figures 2 and 3 show that the heads in these two aquifers in the project area decrease at a fairly uniform rate with increasing depth. In addition, water-level fluctuations in the two groups of wells were very similar. Both of these facts, the uniform decrease in head and the similar water-level fluctuations, reflect the high degree of hydraulic interconnection between the upper glacial and Magothy aquifers.

The average vertical permeability of the Magothy aquifer is only poorly known. Estimates range from less than 1 to about 30 gpd per sq ft. Assuming that it averages about 5 gpd per sq ft in the mid-island area, the computed amount of downward ground-water movement through the Magothy aquifer in the vicinity of the ground-water divide in 1968 was about 0.4 mgd (million gallons per day) per square mile, and the estimated velocity of the downward movement was about 0.006 foot per day.

Because of the low permeability of the Raritan clay, the hydraulic-head loss across this unit is very much larger than the head loss across a comparable thickness of the Magothy and upper glacial aquifers. At the easternmost test site in the village of Lake Ronkonkoma, wells were screened near the base of the Magothy and near the top of the Lloyd aquifers (pl. 5, section A-A', S33379-80). In 1968, the head near the base of the Magothy aquifer (about 45.5 feet above sea level) was about 11.5 feet higher than the head in the Lloyd aquifer (about 34 feet above sea level). Head losses across the Raritan clay at localities east and west of the Lake Ronkonkoma area differ considerably. At Upton, about 12 miles east of the mid-island area, the head loss across the clay was about 6 feet in 1968; and at Plainview (in Nassau County), about 3 miles southwest of Melville, the head loss across the clay was about 42 feet. The differences in head loss from place to place are largely a result of differences in the vertical permeability and thickness of the Raritan clay.

The head in the Lloyd aquifer at Lake Ronkonkoma in 1968 (about 34 feet above sea level) was higher than either of the heads in the Lloyd at Upton (about 30.5 feet above sea level) and at the Suffolk-Nassau boundary (about 27.5 feet above sea level). The head in the Lloyd at Terryville, about 7 miles northeast of the Ronkonkoma area was about 21 feet above sea level in 1968, and it was 19 feet above sea level at Fire Island State Park in 1968, about 13 miles to the southwest. These data suggest that water in the Lloyd aquifer is moving radially from the Lake Ronkonkoma area. The estimated rate of horizontal movement of water in the Lloyd aquifer in the project area in 1968, was on the order of 0.1 foot per day.

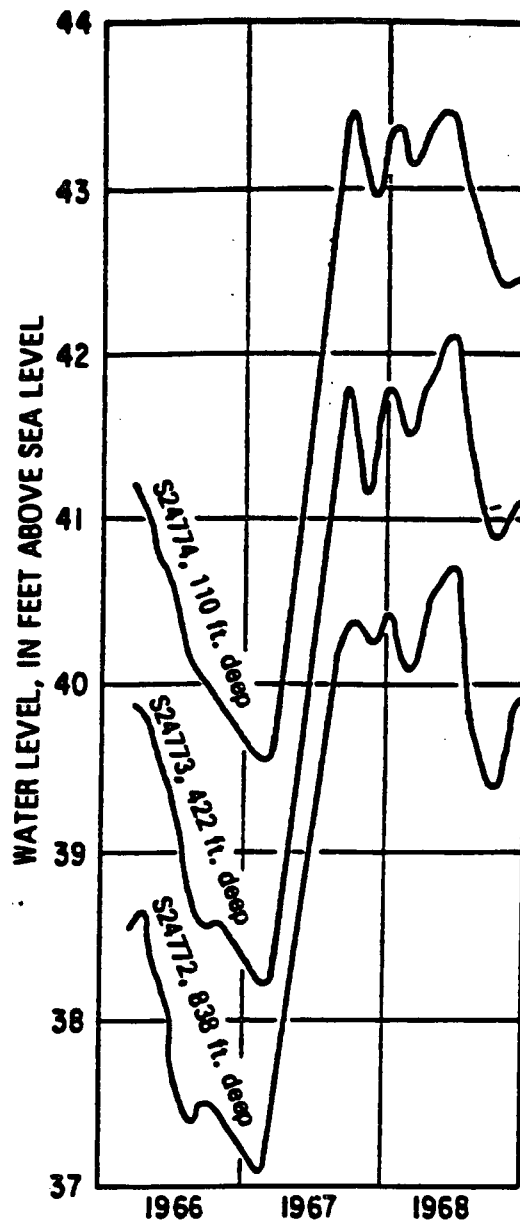


Figure 2.--Fluctuations of water levels in wells screened in the upper glacial aquifer and the Magothy aquifer at Brentwood, N. Y.

FLUCTUATIONS OF GROUND-WATER LEVELS

Fluctuations of water levels in the wells of the mid-island area reflect local variations in recharge to and discharge from the aquifers tapped by the wells. Therefore, changes in ground-water levels afford an insight into many aspects of the ground-water system. Furthermore, the information on water-level fluctuations can be used to help assess the impact of urbanization on the natural hydrologic system.

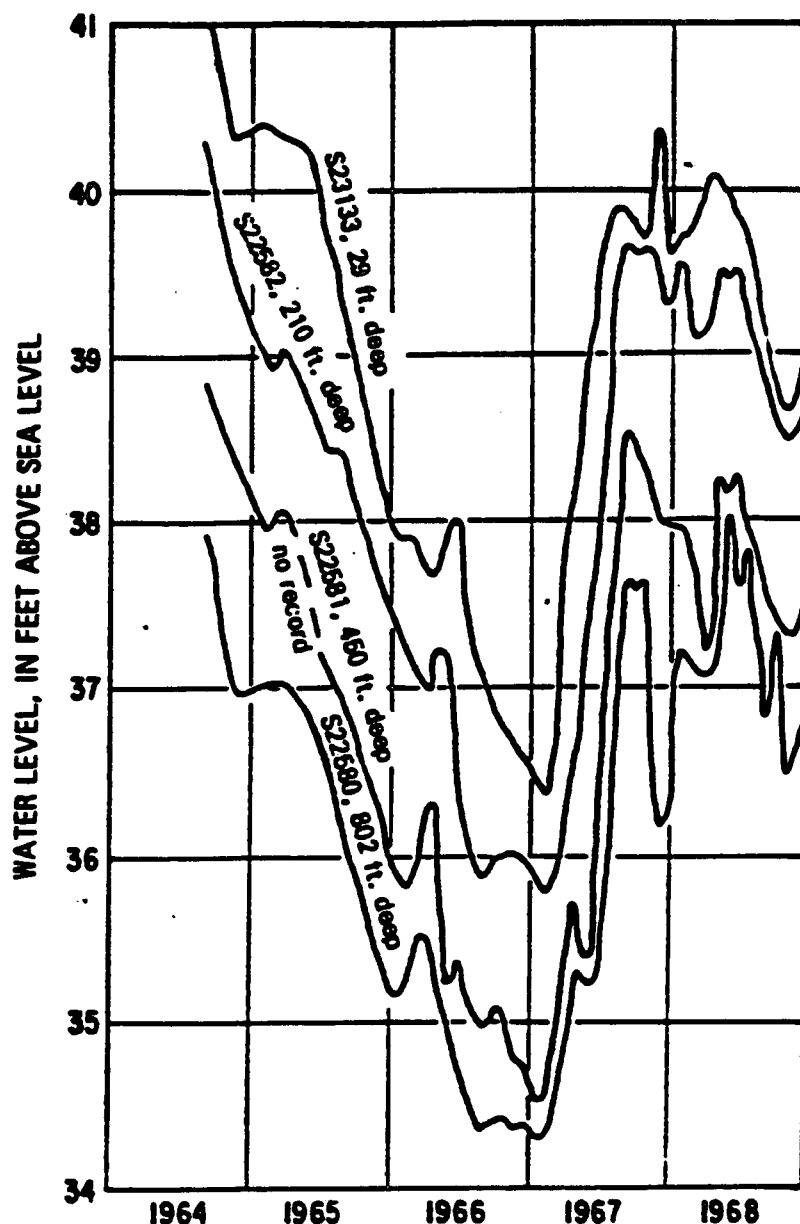


Figure 3.--Fluctuations of water levels in wells screened in the upper glacial aquifer and the Magothy aquifer at Hauppauge, N. Y.

Under natural conditions and in relatively undeveloped areas of Long Island, the water table fluctuates over a range of several feet during the year. Under such conditions, the water table has a rhythmic seasonal pattern; the lowest levels are in late autumn and highest levels are in early spring. This pattern of decline and recovery of the water table reflects the greatest losses of water through evapotranspiration during the growing season and the least such losses between growing seasons. The hydrologic systems in such undeveloped areas are in equilibrium, with inflow balancing outflow. However, if large amounts of water are continually pumped out of a ground-water system, the water table declines until equilibrium is reestablished at a lower level, reflecting a loss of ground water from storage and decreased subsurface and stream outflow from the system.

REFERENCE NO. 18

SUPFOLK COUNTY SANITARY CODE

**ARTICLE 7
WATER POLLUTION CONTROL**

AMENDED APRIL 9, 1986

ARTICLE 7
WATER POLLUTION CONTROL

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SUFFOLK COUNTY SANITARY CODE
ARTICLE 7 - WATER POLLUTION CONTROL

Section 701. Declaration of Policy

The designated best use of all groundwaters of Suffolk County is for public and private water supply, and of most surface waters for food production, bathing and recreation. The federal government has officially designated the aquifer below Suffolk County as a sole-source for water supply. Therefore, it is hereby declared to be the policy of the County of Suffolk to maintain its water resources as near to their natural condition of purity as reasonably possible for the safeguarding of the public health and, to that end, to require the use of all available practical methods of preventing and controlling water pollution from sewage, industrial and other wastes, toxic or hazardous materials, and stormwater runoff.

Section 702. Statement of Purpose

It is the intent and purpose of this article to safeguard all the water resources of the County of Suffolk, especially in deep recharge areas and water supply sensitive areas, from discharges of sewage, industrial and other wastes, toxic or hazardous materials and stormwater runoff by preventing and controlling such sources in existence when this article is enacted and also by preventing further pollution from new sources under a program which is consistent with the above-stated Declaration of Policy.

Section 703. Definitions

Whenever used in this article, unless otherwise expressly stated, or unless the context or subject matter requires a different meaning, the following terms shall have the respective meanings set forth or indicated.

- A. **Board** means the Suffolk County Board of Health.
- B. **Commissioner** means the Commissioner of the Suffolk County Department of Health Services.
- C. **Communal Sewage System** means a series of sanitary intercepting sewers or intercepting collecting sewers, pumping stations, sewage treatment plants, and associated pollution control facilities for the conveyance, treatment, and disposal of sewage operated by a person other than a municipality.
- D. **Deep Recharge Area** means a geographic area of Suffolk County that contributes recharge water to a deep groundwater flow system, thus replenishing the quantity and affecting the quality of the long-term water supply. These areas are identified as Groundwater Management Zones I, II, III and V.

E. Department means the Suffolk County Department of Health Services.

F. Discharge means to release by any means or to relinquish control in a manner that could result in a release to the surface waters, groundwaters, surface of the ground, or below ground.

G. Disposal System means any plumbing or conveyances which result in or are capable of resulting in a discharge of sewage, industrial wastes, toxic or hazardous materials, stormwater runoff, cooling water or other wastes. This includes but is not limited to septic tanks, leaching pools, sumps, tile fields, holding tanks, outfalls and connecting piping.

H. Groundwater Management Zone means any of the areas delineated in Suffolk County by the "Long Island Comprehensive Waste Treatment Management Plan (L.I. 208 Study)," as revised by the "Long Island Groundwater Management Plan," and subsequent revisions adopted by the Board identifying differences in regional hydrogeologic and groundwater quality conditions. The boundaries of the Groundwater Management Zones are set forth on a map adopted by the Board filed in the Office of the Commissioner in Hauppauge, New York.

I. Housebarge means the same as Houseboat except that a housebarge has no self-contained mechanical method of propulsion.

J. Houseboat means a floating structure used as a dwelling with a self-contained mechanical method of propulsion, not primarily designed to be a means of locomotion over water. The design criteria shall be generally accepted standards of naval architecture.

K. Industrial Waste means any liquid, gaseous, or solid waste substance or a combination thereof resulting from any operation or process of industry, manufacturing, trade or business or from the development or recovery of any natural resources, which may cause or might reasonably be expected to cause pollution of the water resources of the County of Suffolk in contravention of the requirements of this article.

L. Municipal Sewage System means the series of sanitary intercepting sewers or intercepting collecting sewers, pumping stations, sewage treatment plants, or pollution control facilities, drains and other facilities, connections and equipment or any combination of the aforementioned, for the conveyance, treatment and disposal of sewage operated by the County of Suffolk or a municipality within the County of Suffolk.

M. Offensive Material means any sewage or non-sewage fecal matter, urine, garbage, waste, or any putrescible organic matter, scavenger waste, the contents of private or individual sewage disposal systems, either liquid or solid, or other substances or liquid which may adversely affect health.

N. Other Wastes means refuse, spillage and the leaching from these materials, oil, tar, acids, chemicals, and all other discarded matter which may reasonably be expected to cause pollution of the waters of the County of Suffolk.

O. Private or Individual Sewage Disposal System means a water-flush facility for the disposal of sewage which does not connect either with a municipal or communal sewage system. This includes, but is not limited to, septic tanks, leaching pools and tile fields.

P. Restricted Toxic or Hazardous Materials shall mean the following toxic or hazardous chemicals that have been or could be expected to be detected in the groundwater, or in discharges to the groundwater, of Suffolk County. This definition applies to these substances alone or in combination, solution or mixture with other substances, or chemically compounded with other elements or compounds.

Arsenic	Freon 113
Barium	Lead
Benzene	Mercury
Bromobenzene	Methylene Chloride
Bromodichloromethane	Nickel
Bromoform	Pesticides
Cadmium	Petroleum Distillates
Carbon Tetrachloride	Phenols
Chlorobenzene	Phthalates
Chlorodibromomethane	Roadway Deicing Salt
Chloroform	Silver
Chlorotoluene	Styrene
Chromium	Tetrachloroethylene
Cis 1,2 Dichloroethylene	1,2,4,5 Tetramethylbenzene
Creosotes	Toluene
Cyanide	1,2,3 Trichlorobenzene
Dichlorobenzene	1,2,4 Trichlorobenzene
1,1 Dichloroethane	1,1,1 Trichloroethane
1,2 Dichloroethane	1,1,2 Trichloroethane
1,1 Dichloroethylene	1,1,2 Trichloroethylene
1,2 Dichloropropane	1,2,3 Trichloropropane
p-Diethylbenzene	1,2,4 Trimethylbenzene
Ethylbenzene	1,3,5 Trimethylbenzene
p-Ethyltoluene	Vinyl Chloride
Fluoride	Xylenes

All other halogenated hydrocarbon compounds.

Q. Sewage means the water-carried human or animal wastes from residences, buildings, industrial establishments or other places, together with such groundwater infiltration and surface water as may be present. A mixture of sewage as herein defined and industrial wastes or other wastes as defined above may be considered industrial wastes or commingling within the meaning of this article.

R. Stormwater Runoff means the portion of total precipitation that travels over natural and developed land surfaces (e.g., woodlands, lawns, farms, gardens, roofs, driveways, parking lots, roads, etc.) transporting contaminants that may be present.

S. Temporary Disposal System means a system for the disposal of sewage where such system is intended for use for a specified period of time prior to completion of the construction of an approved sewage treatment and disposal system.

T. Toxic or Hazardous Materials shall mean the same as defined in Article 12 of this Code.

U. Toxic or Hazardous Wastes shall mean the same as defined in Article 12 of this Code.

V. Treatment System means a system designed to reduce or alter the contaminant content of sewage or industrial waste for the purpose of permitting the discharge of some portion of said waste.

W. Water Supply Sensitive Areas means:

1. A groundwater area separated from a larger regional groundwater system where salty groundwater may occur within the Upper Glacial aquifer, and where deepening of private wells and/or the development of community water supplies may be limited; or

2. Areas in close proximity to existing or identified future public water supply wellfields. In general, for the purposes of this article, "close proximity" shall mean within 1,500 feet upgradient or 500 feet downgradient of public supply wells screened in the Upper Glacial aquifer.

3. A limited water budget area, not underlined by fresh Magothy, defined by published reports acceptable to the commissioner.

4. The areas described in items W.1., 2., 3., above are set forth on a map adopted by the Board filed in the Office of the Commissioner in Hauppauge, New York.

Section 704. Powers of the Commissioner

The commissioner may:

A. make, or cause to be made, any investigation which, in his opinion, is needed for the enforcement of this article or for controlling or reducing the potential for contamination of the waters of the county from sewage, industrial or other wastes, toxic or hazardous materials and/or stormwater runoff;

B. approve, with conditions, non-residential structures, processes, facilities and activities in deep recharge areas and water supply sensitive areas to assure compliance with Section 706. Such conditions shall be embodied in covenants running with the land as specified in the Department's standards;

C. promulgate and establish standards and schedules to effect the purpose of this article;

D. order the posting of a performance bond or other undertaking either prior to or subsequent to the construction or operation of an industrial facility within Suffolk County on a case-by-case basis if evidence indicates such may be necessary to protect water resources from the adverse effects of operating such a facility.

E. Notwithstanding any other provision of this article, if the commissioner finds a condition which has the potential for contaminating the waters of the county with toxic or hazardous materials, or which otherwise constitutes an immediate danger to public health, and determines that it could appear prejudicial to the public interest to delay action, the commissioner may serve an order upon the permit holder, or if there is no permit upon the person in charge of the facility or site, citing such conditions and specifying the corrective action to be taken and a time period of less than fifteen (15) days within which such action shall be taken.

Such order may state that a permit is immediately suspended and/or that all operations are to be discontinued forthwith.

Any order requiring certain action or the cessation of certain activities immediately or within a specified period of less than fifteen (15) days shall provide such person an opportunity to be heard, which hearing shall be scheduled for a time no more than fifteen (15) days after the date the order is served."

Section 705. General Restrictions and Prohibitions

A. Construction of a Disposal System

1. It shall be unlawful for any person to construct, reconstruct, install or substantially modify any disposal system without first having obtained a permit therefor issued by or acceptable to the commissioner.

2. Section 705.A.1 does not apply to stormwater disposal systems unless there is an actual or potential discharge into the system of industrial wastes, toxic or hazardous materials, or sewage.

B. Discharge

1. It shall be unlawful for any person to discharge sewage, industrial wastes, offensive materials, toxic or hazardous materials or other wastes to any surface waters or groundwaters, to the surface of the ground or to a disposal system unless such discharge is specifically in accordance with a State Pollutant Discharge Elimination System (SPDES) Permit or other permit issued by or acceptable to the commissioner for that purpose.

2. No permits, as stipulated in Section 705.B.1, are required for the following types of discharges:

a. discharge of sewage from an existing residential structure to a private or individual sewage disposal system, or from any residential structure, houseboat or housebarge to a communal sewage system or municipal sewage system that does not contravene standards or result in a public health nuisance;

b. discharge of sewage from a commercial or industrial facility to a communal sewage system or municipal sewage system;

c. discharge of stormwater to a disposal system unless there is an actual or potential discharge into the system of industrial wastes or toxic or hazardous materials or sewage.

3. For existing discharges not prohibited by law prior to the effective date of this article, a permit shall be obtained within the time limits provided in Section 707.

C. Construction or Operation of a Treatment System

1. It shall be unlawful for any person to construct, modify or operate a treatment system without first obtaining a permit therefor issued by or acceptable to the commissioner.

D. Commingling

1. It shall be unlawful for any person to commingle stormwater runoff, cooling water, sewage or industrial wastes in any disposal system not approved for that purpose pursuant to this article.

E. Stormwater Discharges

1. It shall be unlawful for any person to develop or use land in such a manner as to cause stormwater runoff from that land to become contaminated and discharged in contravention of the other provisions of this article.

**Section 706. Deep Recharge Areas and
Water Supply Sensitive Areas**

The following additional restrictions and prohibitions shall apply in deep recharge areas and water supply sensitive areas.

A. It shall be unlawful for any person to discharge any restricted toxic or hazardous materials or to discharge industrial wastes from processes containing restricted toxic or hazardous materials to the groundwaters, to the surface of the ground, beneath the surface of the ground, to a municipal or communal sewage system, or to a disposal system except as follows:

1. application of fertilizers, pesticides or other agricultural chemicals approved for that purpose by the appropriate state and federal agencies; or

2. application of road surfacing or road construction materials or deicing salts to roadways, walkways, and parking areas; or

3. discharge from an establishment to a municipal or communal sewage system with effluent disposal to marine surface waters or recharge outside of the deep recharge areas and water supply sensitive areas, and the following minimum requirements are satisfied pursuant to a permit issued by or acceptable to the commissioner:

a. Dual plumbing systems shall be installed, one for the sanitary wastes and one for industrial wastes.

b. Sampling access approved by the administrative head of the municipal or communal sewage system and the Department shall be provided for both the sanitary and industrial waste systems.

c. The administrative head of the municipal or communal sewage system, with approval of the Department, shall determine which industrial wastes are acceptable to "hold and haul" and which require pretreatment prior to discharge to the collection system in order to assure compliance with the applicable sewer use ordinance.

d. Personnel authorized by the administrative head of the municipal or communal sewage system or other individual(s) acceptable to the commissioner, shall operate at each establishment its pretreatment facility for industrial wastes prior to discharge to the collection system.

e. Only batch pretreatment of industrial wastes will be permitted. Batch facilities and facilities for storage of drums containing toxic or hazardous wastes shall be located in an area accessible at all times by district personnel, in or adjacent to the industrial building, with heat and power provided by the owner.

f. Personnel authorized by the administrative head of the municipal or communal sewage system or other individual(s) acceptable to the commissioner, will be responsible for collection and disposal of pretreatment sludges, and other "hold and haul" materials.

g. The owner shall allow the personnel authorized by the administrative head of the municipal or communal sewage system or other individual(s) acceptable to the commissioner, access, from time to time, to wet process areas to perform their duties and inspections.

h. Industrial process-area floors shall be provided with adequate means to contain any spill of restricted toxic or hazardous materials. The design of containment facilities shall be subject to the approval of the commissioner.

i. A minimum of four (4) groundwater monitoring wells shall be installed at the owner's expense.

j. Financial assurance shall be provided to pay for cleanup of spills. This cost shall be entered as a judgment upon notice against the owner, occupant, tenant, or lessee responsible for such spill or spills.

B. It shall be unlawful to use or store any restricted toxic or hazardous materials on any premises except as follows:

1. a. the intended use of the product stored is solely for on-site heating, or intermittent stationary power production such as stand-by electricity generation or irrigation pump power; and

b. the facility for such storage is intended solely for the storage of kerosene, number 2 fuel oil, number 4 fuel oil, number 6 fuel oil, diesel oil or lubricating oil; and

c. the facility for such storage is constructed in accordance with the construction standards of Article 12 of the Suffolk County Sanitary Code for non-petroleum hazardous materials; and

d. the materials so stored are not industrial wastes from processes containing restricted toxic or hazardous materials; and

e. the materials stored are not intended for resale; or

2. a. the materials so stored are in containers where the total liquid capacity stored at any time does not exceed 250 gallons and where the dry storage in bags, bulk or small containers does not exceed 2,000 pounds; or

3. a. the materials so stored are intended solely for for treatment or disinfection of water or sewage in treatment processes located at the site; or

4. a. the materials are stored solely incident to retail sales on premises and are not processed, pumped, packaged, or repackaged at the site; or

5. a. the materials are stored at a service station or similar installation solely incident to the distribution of gasoline, kerosene, diesel oil or other petroleum products for motor vehicular uses and repair; and

b. the facility for such storage is constructed in accordance with construction and monitoring standards of Article 12 of the Suffolk County Sanitary Code for non-petroleum hazardous materials; or

6. a. the materials are stored at an establishment for which a permit has been secured in accordance with Section 706.A.3, and a permit for such storage has been granted by the Department.

7. a. the materials are stored on a farm site solely incident to on-premises use, and consist of fertilizers, pesticides, or other agricultural chemicals to be applied in accordance with the provisions of Section 706.A.1.

C. The provisions of Sections 706.A and 706.B of this article shall be applicable:

1. immediately for all non-residential facilities which have not been approved, constructed, or put into operation prior to the effective date of this article; and

2. immediately for all non-residential facilities which were approved, constructed, or put into operation prior to the effective date of this article upon:

a. any change in use or process which results in an increase of mass loading in the discharge of restricted toxic or hazardous materials, or introduces a toxic or hazardous material not previously discharged; or

b. any change in use or process which results in an increase of the storage or change of type of restricted toxic or hazardous materials.

D. When upgraded in accordance with the time schedule specified in Article 12, existing facilities, including those for petroleum products, not otherwise covered by items 706.A, 706.B or 706.C, above, shall conform to the standards of Article 12 for non-petroleum hazardous materials. These requirements do not apply to facilities upgraded in accordance with Article 12 prior to the effective date of this article.

Section 707. Permits

A. All permits required by this article shall be applied for in accordance with the provisions of Article 3 of the Suffolk County Sanitary Code.

B. All persons required to obtain a permit by reason of any law, rule or regulation in effect prior to the effective date of this article shall be governed by such law, rule or regulation in determining when said permit shall be obtained.

C. All persons newly required to obtain a permit by this article due to any act or condition in existence as of the date this article becomes effective, shall apply for said permit within one (1) year of that date.

D. All persons required to obtain a permit by this article due to any act or condition not in existence on the effective date of this article must apply for and receive said permit prior to undertaking such act or creating such condition.

Section 708. Emergency Embargo; Seizure

A. In accordance with the general provisions of Article 2 of the Suffolk County Sanitary Code, the commissioner or his authorized agent is authorized to seize and embargo materials consisting of industrial wastes, toxic or hazardous materials, or any combination thereof when in the judgment of the commissioner, the nature and condition of said material constitutes an actual or potential hazard to the source of drinking water supply.

B. The following additional requirements shall also apply:

1. When materials are embargoed or seized pursuant to subsection A. above, they shall not be moved, used or removed except by or under the direction of an agent authorized by the commissioner.

2. It shall be unlawful for a person not authorized by the commissioner to remove or alter an embargo order or tag.

3. After having embargoed, condemned or otherwise seized materials pursuant to this section, the commissioner shall afford the owner of the seized material an opportunity to be heard at a hearing held within ninety-six (96) hours after the seizure. The commissioner may then vacate the order or sustain it and order a proper and safe disposition of the materials seized.

4. Unless ordered otherwise, removal shall be at the expense of the owner.

Section 709. Monitoring and Reporting

A. All persons maintaining subsurface leaching facilities and holding tanks for the purposes defined in Section 703.G shall make them accessible to representatives of the Department for sampling and monitoring purposes. The type of access shall be in conformance with the requirements of the commissioner.

B. All persons maintaining a discharge of industrial wastes, toxic or hazardous materials, and/or offensive materials pursuant to a permit issued by the commissioner must, at their own expense, monitor the discharge for such constituents at such intervals as specified in their permit.

1. The samples shall be collected in a manner prescribed by the Department, and analytical results shall be reported to the Department as specified in the permit.

2. The permittee may employ private laboratory facilities of its own choosing. However, the laboratory shall be approved by New York State Departments of Health or Environmental Conservation or other agency acceptable to the commissioner for the type of analyses performed.

3. Sampling shall be by an employee of the laboratory which prepares the analysis, and the laboratory shall be responsible for the accuracy and quality of the sample.

C. Owners, tenants and occupants of industrial facilities may be required to install monitoring systems, such as monitoring wells, both upgradient and downgradient in the groundwater flow. The number and location of the monitoring wells and their installation shall be in conformance with the requirements of the Department. The owner, tenant and occupant shall be responsible for all costs, as well as costs for groundwater monitoring and evaluation as required by the Department.

D. The owners of all real property used for non-residential purposes shall, within thirty (30) days of change, report in writing to the Department:

1. New Facility

a. Name of tenant or occupant; address, including tax map number.

b. Description of process, operation, or use.

2. Existing Facility

a. Name of new tenant or occupant; address, including tax map number; description of process, operation, or use.

b. Description of change of process, operation, or use.

This notification requirement shall not apply to changes in tenancy or occupancy of the space where a permit is not, or would not be, required for the use.

Section 710. Requirement to Connect to Public Sanitary Sewer

A. Sewage and industrial wastes from any building or premises shall be discharged directly into a municipal sewage system, if available and accessible. Discharge of industrial wastes to a municipal sewage system shall be in accordance with the applicable sewer use ordinance.

B. If there is no municipal sewage system or facility connecting therewith available and accessible, sewage from any new building or premises shall be discharged directly into a communal sewage system or a facility connecting with a communal sewage system, if available and accessible.

C. If there is no municipal or communal sewage system or facility connecting therewith available and accessible, a private sewage disposal system approved by the Department may be used.

D. In the event that a municipal or communal sewage system or facility connecting therewith becomes available and accessible, any building or premises shall be connected to such municipal or communal sewage system, and immediately thereafter the use of any other sewage disposal system or facility shall be discontinued.

Section 711. Abandonment of Disposal Systems

Existing disposal systems abandoned as a result of connection to municipal sewage systems or communal sewage systems or different disposal systems or for other reasons shall be removed or permanently sealed in a manner acceptable to the commissioner.

Section 712. Engineering Plans

A. All plans, specifications, and reports required by this article shall be prepared by a New York State licensed Professional Engineer unless otherwise prescribed in the New York State Education Law.

B. No permit to construct, reconstruct, modify, use or operate shall be issued without the prior submission of plans and/or reports acceptable to the commissioner.

Section 713. Operation of Sewage or Industrial Waste Treatment Facilities

A. All sewage and industrial waste treatment facilities shall be operated by a person or persons with qualifications acceptable to the commissioner.

B. An operator of a sewage or industrial waste treatment system shall be physically present at the sewage or industrial waste treatment plant he is responsible for operating for a period of time each day satisfactory to the commissioner.

C. This section does not apply to underground septic tank and leaching pool systems used for the disposal of domestic sewage.

Section 714. Enforcement

The provisions of this article shall be enforced in accordance with the enforcement provisions of Article 2 of the Suffolk County Sanitary Code.

Section 715. Appeals and Variances

In any case where an applicant for a permit or approval is dissatisfied with a determination of the authorized agent to act for the commissioner, or seeks a variance from the strict application of the letter of the requirements of this article, or standards promulgated pursuant to this article, he may appeal from the determination of the deputy or for consideration of his application to the Board of Review in accordance with the provisions of Article 2 of the Suffolk County Sanitary Code.

Section 716. Separability of Provisions

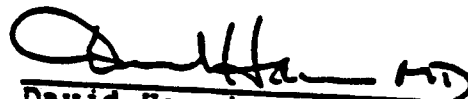
In the event that any provision of this article is declared unconstitutional or invalid, or the application thereof to any person or circumstance is held invalid, the applicability of such provision to other persons and circumstances and the constitutionality or validity of every other provision of this article shall not be affected thereby.

CERTIFICATION

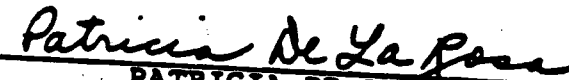
STATE OF NEW YORK)
COUNTY OF SUFFOLK)

I, David Harris, M.D., M.P.H., Commissioner of the Suffolk County Department of Health Services, and Chairman of the Suffolk County Board of Health, do hereby certify that the foregoing Article 7 "Water Pollution Control" of the Suffolk County Sanitary Code, as amended, has been adopted by the Board of Health at its regular meeting held in Hauppauge, New York, on April 9, 1986, and that the same is a true and complete copy of said article published by authority and order and under the direction of the said Suffolk County Department of Health Services.

IN WITNESS WHEREOF, I have
hereunto set my hand on this
24 day of April, 1986.


David Harris, M.D., M.P.H.
Commissioner, Suffolk County
Department of Health Services

Subscribed and sworn to before me
this 24 day of April 1986.


PATRICIA DE LA ROSA
NOTARY PUBLIC, State of New York
Suffolk County, No. 4748964
Commission Expires March 30, 1987

ZONES I & III

- 1.) NASSAU-SUFFOLK CTY. LINE & N. HEMPSTEAD TPKE
- 2.) N. HEMPSTEAD TPKE. & NYS 25A
- 3.) NYS 25A & INDIAN HEAD RD.
- 4.) INDIAN HEAD RD. & SMITHTOWN RD.
- 5.) SMITHTOWN RD. & PLYMOUTH BLVD.
- 6.) PLYMOUTH BLVD. & OLD WILLETS PATH
- 7.) OLD WILLETS PATH & VETS. MEMORIAL HWY.
- 8.) VETS. MEMORIAL HWY. & NYS 347
- 9.) NYS 347 & STONY BROOK RD.
- 10.) STONY BROOK RD. & MAIN ST.
- 11.) MAIN ST. & NYS 25A
- 12.) NYS 25A & SOUND AVE.

- 13.) SOUND AVE. & ROANOKE AVE.
- 14.) ROANOKE AVE. & PECONIC AVE.
- 15.) PECONIC AVE. & NYS 24
- 16.) NYS 24 & RED CREEK RD.
- 17.) RED CREEK RD. & SQUIRETOWN RD.
- 18.) SQUIRETOWN RD. & MONTAUK HWY.
- 19.) MONTAUK HWY. & LIRR
- 20.) LIRR & OLD COUNTRY RD.
- 21.) OLD COUNTRY RD. & EASTPORT RD.

- 22.) EASTPORT
- 23.) SUNRISE
- 24.) MIDDLE IS
- 25.) LIRR & CR
- 26.) CR 101 &
- 27.) SOUTHAV
- 28.) MEDFORD
- 29.) CEDAR AV
- 30.) N.OCEAN
- 31.) FISK RD. &
- 32.) JAMAICA
- 33.) BLUE POIN



- 22.) EASTPORT RD. & SUNRISE HWY.
- 23.) SUNRISE HWY. & MIDDLE ISLAND RD.
- 24.) MIDDLE ISLAND RD. & LIRR
- 25.) LIRR & CR 101
- 26.) CR 101 & SOUTHAVEN AVE.
- 27.) SOUTHAVEN AVE. & MEDFORD AVE.
- 28.) MEDFORD AVE. & CEDAR AVE.
- 29.) CEDAR AVE. & N. OCEAN AVE.
- 30.) N. OCEAN AVE. & FISK RD.
- 31.) FISK RD. & JAMAICA AVE.
- 32.) JAMAICA AVE. & BLUE POINT RD.
- 33.) BLUE POINT RD. & LIE

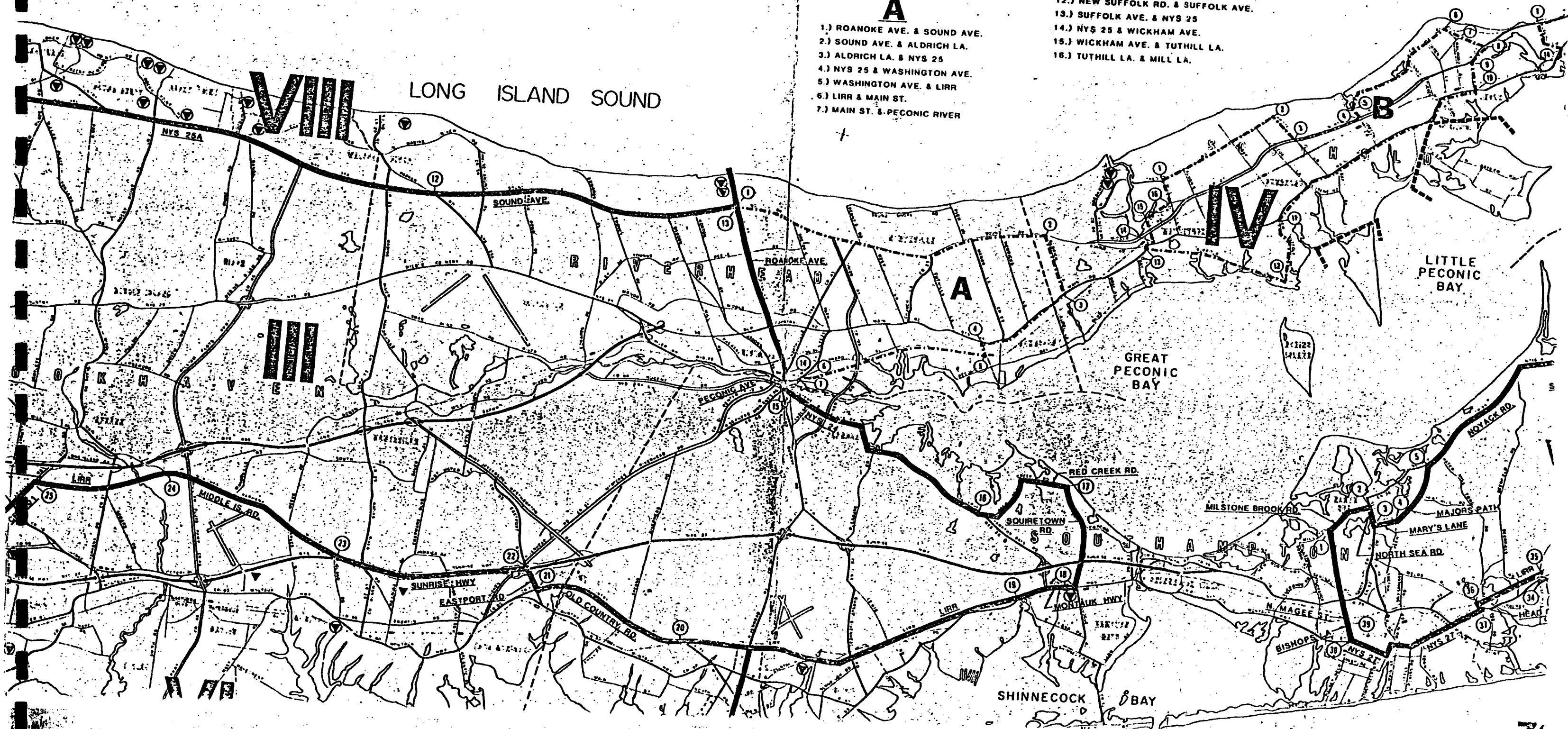
- 34.) LIE & NICOLLS RD.
- 35.) NICOLLS RD. & SUNRISE HWY.
- 36.) SUNRISE HWY. & CONNETQUOT AVE.
- 37.) CONNETQUOT AVE. & LOWELL AVE.
- 38.) LOWELL AVE. & LIRR
- 39.) LIRR & SAGTIKOS PKWY.
- 40.) SAGTIKOS PKWY. & SONIA RD.
- 41.) SONIA RD. & S. 4th ST.
- 42.) S. 4th ST. & UDALL RD.
- 43.) UDALL RD. & GRAND BLVD.
- 44.) GRAND BLVD. & LIRR
- 45.) LIRR & NASSAU-SUFFOLK CTY. LINE

- ### B
- 1.) MILL LA. & OREGON RD.
 - 2.) OREGON RD. & BRIDGE LA.
 - 3.) BRIDGE LA. & CR 27
 - 4.) CR 27 & PECONIC LA.
 - 5.) PECONIC LA. & SOUND VIEW AVE.
 - 6.) SOUND VIEW AVE. & LIGHTHOUSE RD.
 - 7.) LIGHTHOUSE RD. & NORTH RD.
 - 8.) NORTH RD. & CR 27
 - 9.) CR 27 & BOISSEAU AVE.
 - 10.) BOISSEAU AVE. & RTE. 25
 - 11.) RTE. 25 & NEW SUFFOLK RD.
 - 12.) NEW SUFFOLK RD. & SUFFOLK AVE.
 - 13.) SUFFOLK AVE. & NYS 25
 - 14.) NYS 25 & WICKHAM AVE.
 - 15.) WICKHAM AVE. & TUTHILL LA.
 - 16.) TUTHILL LA. & MILL LA.

- ### C
- 1.) CASSIDY LA. & CR 27
 - 2.) CR 27 & McCANN LA.
 - 3.) McCANN LA. & SOUND DR.
 - 4.) SOUND DR. & SOUTHERN BLVD.
 - 5.) SOUTHERN BLVD. & CEDAR DR.
 - 6.) CEDAR DR. & STARS RD.
 - 7.) STARS RD. & NYS 25
 - 8.) NYS 25 & MANHASSET AVE.
 - 9.) MANHASSET AVE. & CHAMPLIN PL.
 - 10.) CHAMPLIN PL. & MAIN ST.

- 11.) MAIN ST. & NY
- 12.) NYS 25 & LIRR
- 13.) LIRR & NYS 25
- 14.) NYS 25 & CAS

- ### A
- 1.) ROANOKE AVE. & SOUND AVE.
 - 2.) SOUND AVE. & ALDRICH LA.
 - 3.) ALDRICH LA. & NYS 25
 - 4.) NYS 25 & WASHINGTON AVE.
 - 5.) WASHINGTON AVE. & LIRR
 - 6.) LIRR & MAIN ST.
 - 7.) MAIN ST. & PECONIC RIVER



C

- 11.) MAIN ST. & NYS 25
- 12.) NYS 25 & LIRR
- 13.) LIRR & NYS 25
- 14.) NYS 25 & CASSIDY LA.

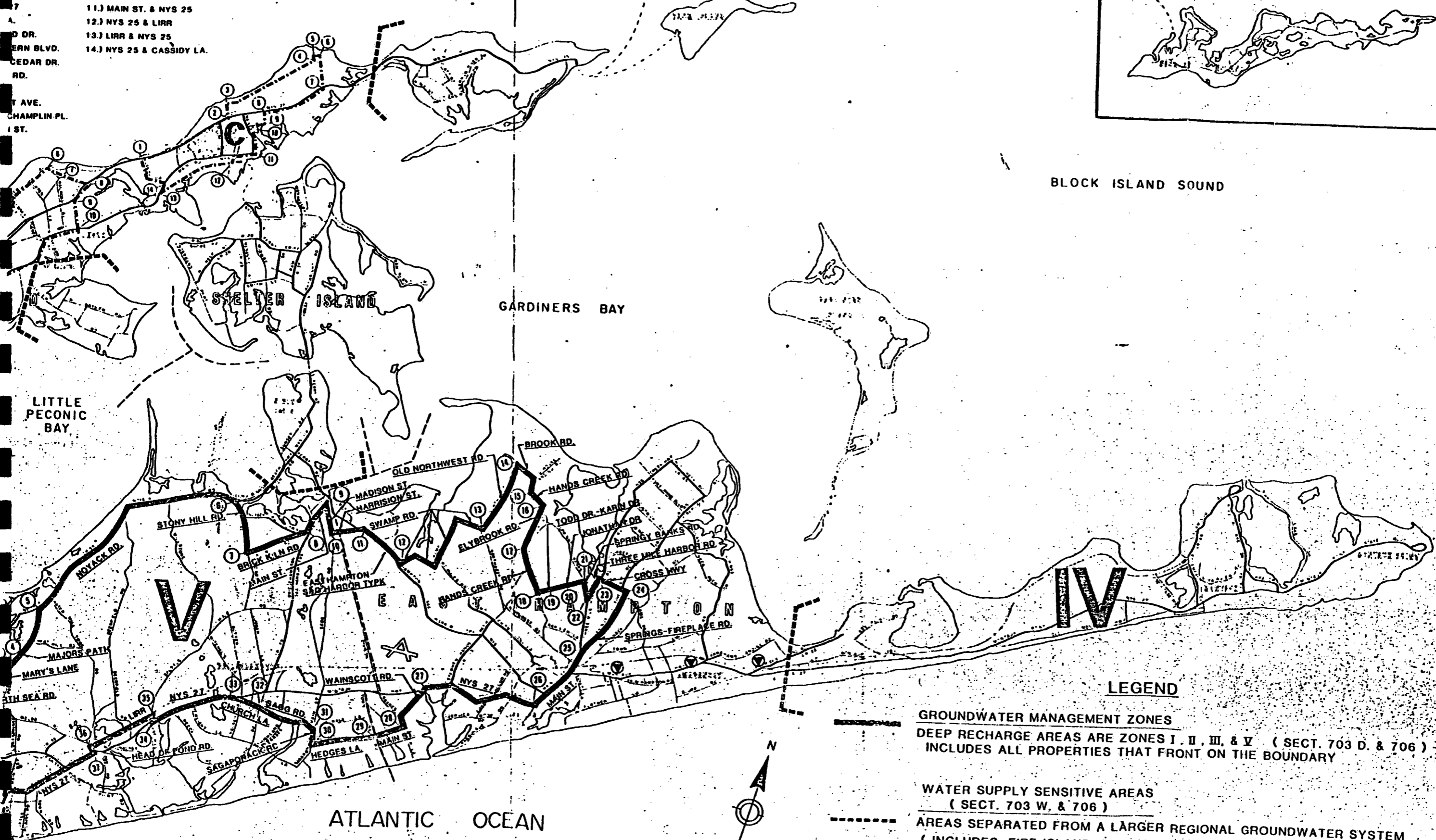
7
A.
D DR.
ERN BLVD.
CEDAR DR.
RD.
T AVE.
CHAMPLIN PL.
ST.



BLOCK ISLAND SOUND

GARDINERS BAY

LITTLE
PECONIC
BAY



LEGEND

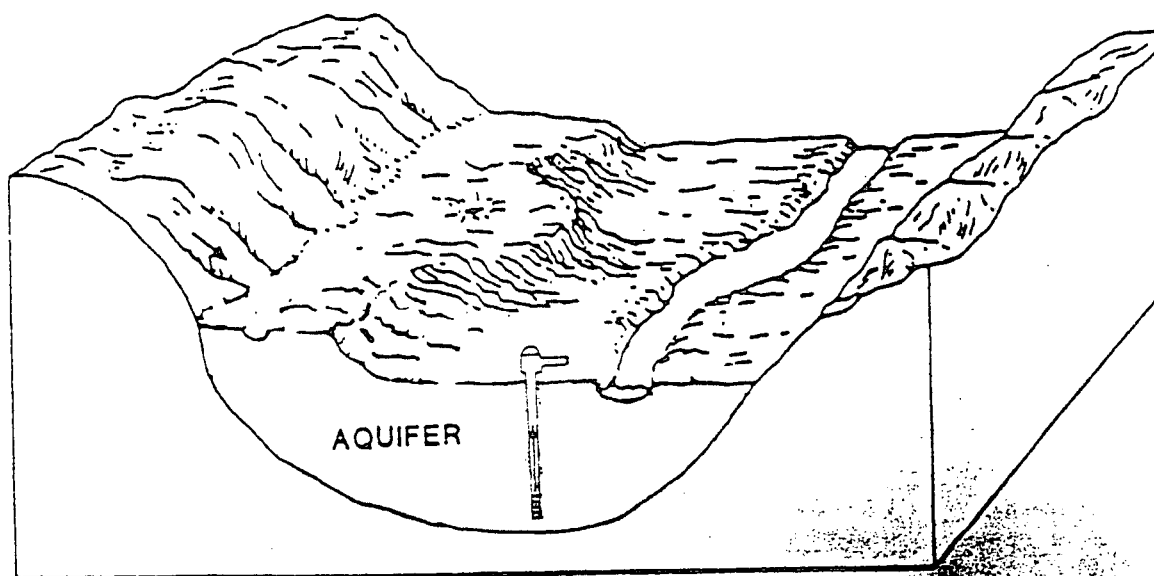
- GROUNDWATER MANAGEMENT ZONES
- DEEP RECHARGE AREAS ARE ZONES I, II, III, & V (SECT. 703 D. & 706) - INCLUDES ALL PROPERTIES THAT FRONT ON THE BOUNDARY
- WATER SUPPLY SENSITIVE AREAS (SECT. 703 W. & 706)
- AREAS SEPARATED FROM A LARGER REGIONAL GROUNDWATER SYSTEM (INCLUDES: FIRE ISLAND, SHELTER ISLAND, FISHERS ISLAND, GILGO / OAK BEACH)
- WATER BUDGET AREA OF THE NORTH FORK
- WELLFIELD OUTSIDE OF DEEP RECHARGE AREA OR OTHER WATER SUPPLY SENSITIVE AREA

ZONE V

ATLANTIC OCEAN

REFERENCE NO. 19

NEW YORK STATE WELLHEAD PROTECTION PROGRAM



Submittal
to
United States Environmental Protection Agency

New York State Department of Environmental Conservation
MARIO M. CUOMO, Governor THOMAS C. JORLING, Commissioner

September 1990

NEW YORK STATE WELLHEAD PROTECTION PROGRAM

**SUBMITTAL
TO
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
IN
APPLICATION FOR IMPLEMENTATION FUNDS**

**NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF WATER
ALBANY, NY**

SEPTEMBER 1990

PREFACE

This report represents a revision of the Proposed New York State Wellhead Protection Program, submitted to the U.S. Environmental Protection Agency on June 19, 1989. Following the June 1989 submittal, there was an additional review by the New York State Wellhead Protection Advisory Committee (see ACKNOWLEDGEMENTS) and by key program managers and regional staff of the NYS Department of Environmental Conservation. The initial comments of the USEPA concerning the submittal were received by New York in January 1990. In March 1990, the USEPA, in accordance with the provisions of the Safe Drinking Water Act amendments, notified the state that the submittal was incomplete. A public hearing was held in August, 1990 to complete the process. Comments received were used in revising this document, and are also discussed in an attachment to this Submittal. The revisions contained in this document primarily include many clarifications of statements made in the original document, but also include additional items to complete the original submittal (e.g., public participation summary) and items to address the adequacy concerns of USEPA.

The wellhead protection activities of the Department of Environmental Conservation in the intervening period have included further development of new source management programs (e.g., chemical bulk storage), incorporation of wellhead protection in existing programs (e.g., water supply permit program), assistance to regional planning agencies in wellhead protection

activities (e.g., 205(j) projects on source identification), regional and statewide outreach and education efforts, and providing geologic information and unconsolidated aquifer delineation information.

Most importantly, the interest of county agencies and municipal governments in New York in wellhead protection has grown considerably since the June 1989 submittal, with significant activity by key counties and municipalities in Upstate New York, by the Long Island Regional Planning Board concerning Long Island's Special Groundwater Protection Areas, and by Long Island's major water suppliers. Substantial interest in training (including delineation models and management tools), and in developing protection ordinances has been expressed.

Agencies and local government associations apart from the Department of Environmental Conservation have initiated public discussion and training activities concerning wellhead protection and groundwater management.

These activities demonstrate the desired evolution of local wellhead protection programs that the New York State Wellhead Protection Program is designed to foster.

with the overall wellhead protection objectives if they unduly diminish funds available for management program implementation or if the management program does not require great sophistication. Increased refinements of delineations are justifiable to the extent that corresponding refinements in management and enforcement are practical and possible.

1.4. Wellhead Protection Program Summary

This summary is an overview of material developed in more detail in Chapters 2 through 8.

1.4.1. Agency Responsibilities

The Department of Environmental Conservation (DEC) is the principal agency responsible for developing and implementing state-level aspects of the Wellhead Protection Program and for coordination. The Department of Health (DOH) is responsible for certain aspects related to public water supply well data, contingency planning, new well planning, and Watershed Rules and Regulations. Regional and county planning agencies and county governments are responsible for county-level planning, management and educational outreach elements in the overall program, in addition to any county-level ordinances developed for wellhead protection. Town, village and city governments are responsible for local land use control, local ordinances and other local-level aspects of wellhead protection. Water suppliers will have a role in developing local Watershed Rules and Regulations, education, land acquisition and other program aspects determined by DEC and DOH. The educational effort will be shared by all levels, including Cooperative Extension, the universities and the State Education Department. Federal agencies and other state agencies will participate as appropriate, as coordinated by DEC with the assistance of EPA for federal agencies.

1.4.2. Wellhead Protection Area Delineation

The Safe Drinking Water Act defines a Wellhead Protection Area (WHPA) as "the surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfields." This definition is not specific because there is no

time framework and because there is a requirement that contaminants be reasonably likely to reach the well, a condition that is very difficult to accurately predict. States are given flexibility by the Safe Drinking Water Act in determining delineation approaches.

New York State proposes that unconsolidated aquifer boundaries serve as the fundamental delineation of wellhead protection areas and that a multiple zone approach be used within the total WHPA for varying management relative to risk. This approach is modified for Long Island and for bedrock aquifers, as described in Chapter 3. New York's approach proposes to allow local flexibility in an evolutionary process of delineation refinements, and to allow utilization of previously delineated protection areas, where appropriate.

There are many distinct advantages in this overall approach. A very important advantage is that considerable aquifer characterization and mapping work has already been accomplished. Second, it is consistent with the evolution and principal policies of both the comprehensive New York State Groundwater Management Program (1987) and New York State Water Resources Management Strategy (1989), in addition to the New York State Watershed Rules and Regulation policies. Third, it focuses attention of local governments on the entire aquifer resource and facilitates contingency planning and new (or future) well protection. Finally, it provides a base within which more sophisticated delineations (e.g., subdividing the overall WHPA) can be made as programs require and funding permits.

A possible drawback of using aquifer boundaries—that aquifers may be broad regional systems—is not a major problem in most of New York State. In Upstate New York most public water supplies using groundwater are in unconsolidated aquifers of rather limited areal extent. Most important recharge areas are within the boundaries of the unconsolidated aquifers, another advantage of this approach.

Chapter 3 provides further details and background on wellhead protection area delineation.

TABLE 3.1.
WELLHEAD PROTECTION AREA
DELINEATION SUMMARY

Geographic Region	Aquifer Area	Wellhead Protection Area Baseline Delineation
Long Island	Magothy & Lloyd Aquifers <hr/> Glacial Aquifer	Deep Flow Recharge Area <hr/> Simplified Variable Shape: 1,500 ft. radius upgradient 500 ft. radius downgradient
Upstate	Unconsolidated Aquifers <hr/> Bedrock Aquifers	Aquifer Boundaries (land surface) <hr/> Fixed Radius: 1,500 ft. radius

REFERENCE NO. 20

HAZARDOUS WASTE DISPOSAL SITE REPORT
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Code: _____

Site Code: 152029

Name of Site: Spectrum Finishing Corp. Region: 1

County: Suffolk Town/City W. Babylon

Street Address 50 Dale Street

Status of Site Narrative:

As of 7/83 the site is an active electroplating facility. It consists of a building, floor collection pit, inside drum storage, inside tanks, outside drum storage, underground leaching tanks, above ground tanks and a storm drain. It is located in an industrial park area with the majority of the area paved.

Type of Site: Open Dump ☐
Landfill ☐
Structure ☒

Treatment Pond(s) ☐
Lagoon(s) ☐

Number of Ponds _____
Number of Lagoons _____

Estimated Size 0.5 Acres

Hazardous Wastes Disposed? Confirmed ☒ Suspected ☐

***Type and Quantity of Hazardous Wastes:**

TYPE	QUANTITY (Pounds, drums, tons, gallons)
<u>Heavy metals: cadmium, chromium, copper,</u>	<u>11,000 gallons total</u>
<u>iron, nickel, zinc,</u>	_____
<u>toluene 2-Butanone</u>	_____
_____	_____
_____	_____

* Use additional sheets if more space is needed.

REFERENCE NO. 21

DEPARTMENT OF HEALTH SERVICES

-against-

-- SPECTRUM FINISHING CORP.
50 Dale Street
West Babylon, New York 11704

Department of Health Services
225 Babro Drive
Hauppauge, N. Y. 11787

May 11, 1982
1:39 p.m.

B E F O R E : JAMES L. COHEN, Hearing Officer

HEARING, held under and pursuant to the Public Health Law of the State of New York, the Sanitary Code of the County of Suffolk and the Statutes of the State of New York and the Laws and Ordinances of the County of Suffolk, in the Matter of the Complaint against SPECTRUM FINISHING CORP., held pursuant to Notice.



ADEPT COURT REPORTING SERVICE

COURT REPORTERS & NOTARIES

28 AMERICAN AVENUE, CORAM, NEW YORK 11727

101. (15) 28 1946

(712) 575-7804

A P P E A R A N C E S :

JAMES L. CORBIN
Hearing Officer

PATRICK PERRELLA
Senior Public Health Sanitarian
Environmental Enforcement Coordinator
Department of Health Services

DAVID ORRIG
Public Health Sanitarian
Department of Health Services

JO ANNE JOHNSON
Public Health Sanitarian
Department of Health Services

SALVATORE JAMES NIOSIA, ESQ.
Attorney for Respondent
145 Marritt Road
Farmingdale, New York 11735

WILLIAM DE CHIRICO
Vice President of Spectrum Finishing Corporation
50 Dale Street
Babylon, New York 11704

* * * * *

THE HEARING OFFICER: At this time,
I would like to open the hearing, formal
hearing on the matter before us pertaining
to Spectrum Finishing Corporation, 50 Dale
Street, West Babylon, New York.

I would like to mark as Exhibit 1
the Notice of Formal Hearing.

(Whereupon, the above-referred to
Notice of Formal Hearing was marked as

1
2 Department's Exhibit 1 in evidence)

3 THE HEARING OFFICER: The second
4 matter of business, I would like to mark
5 Exhibit 2, the letter from the Commissioner,
6 Dr. David Harris, appointing me as Hearing
7 Officer in this matter.

8 (Whereupon, the above-referred to
9 designation was marked as Department's
10 Exhibit 2 in evidence)

11 THE HEARING OFFICER: For the record,
12 would you please identify yourselves.

13 MR. PERRELLA: Patrick Perrella,
14 Senior Sanitarian, Suffolk County Department
15 of Health Services.

16 MR. OBRIG: David Obrig, Public Health
17 Sanitarian, Suffolk County Health Department.

18 MS. JOHNSON: JoAnne Johnson, Public
19 Health Sanitarian, Suffolk County Department
20 of Health Services.

21 MR. NICOSIA: Salvatore J. Nicosia,
22 attorney, 145 Harriet Road, New York,
23 counsel to Spectrum.

24 MR. DE CHIRICO: William DeChirico,
25 Spectrum Publishing Corporation.

3

2 THE HEARING OFFICER: In the absence
3 of a County Attorney, Mr. Perrella, would
4 you like to open with a statement.

5 MR. PERRELLA: Yes, first of all,
6 I would like to introduce for the record,
7 evidence of a duly executed Order on Consent,
8 which was agreed to between Spectrum
9 Finishing Corporation and Suffolk County
10 Department of Health Services. This Order
11 on Consent, which I will identify by its
12 consent order number IW81-53; date,
13 12/1/81; this Order on Consent was signed
14 by Spectrum Finishing on December 16, 1981,
15 and was signed by the Commissioner, Dr.
16 David Harris, on January 8, 1982.

17 The terms of this Order on Consent,
18 which I'm not going to read verbatim, but I
19 would like to bring the Hearing Officer's
20 attention to, in that the Department is
21 alleging that the Order on Consent has been
22 violated. With regard to Paragraph Number One,
23 which stated: Respondent shall not discharge
24 any of its industrial waste onto the ground
25 unless the Respondent, Spectrum Finishing,

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1
2 shall have applied for, and received, a
3 S.P.D.E.S. permit for such discharge.

4 In addition, the Department alleges
5 that Respondent did violate Paragraph Number
6 Two, that is, of the Order on Consent, in
7 that Respondent failed to submit by
8 January 3rd, 1982, complete application for
9 Article 12, certificate to operate a storage
10 facility.

11 In addition, Department alleges
12 that Respondent did not, by March 3rd, 1982,
13 complete construction of its storage facility
14 for toxic or hazardous materials as required
15 in Paragraph Three of the Order on Consent.

16 In addition, the Department alleges
17 that Respondent did not, by December 17,
18 1981, move all of its storage of toxic or
19 hazardous materials indoors and continue
20 to store indoors as required in Paragraph
21 Four of its Order on Consent.

22 I wish to bring the Hearing Officer's
23 attention to the fact that a violation of
24 the duly executed Order on Consent is a
25 violation of the Suffolk County Sanitary Code

5

2 in of itself and that the violations alleged
3 in Item Number One of the Hearing Notice,
4 which referred to unpermitted discharges,
5 are also violations of the Suffolk County
6 Sanitary Code in and of themselves.

7 I would like to introduce into
8 evidence the Order on Consent Number 81-53.
9 Mark that as an exhibit.

10 (Whereupon, the above-referred to
11 Order on Consent was handed from Mr.
12 Perrella to the Hearing Officer)

13 MR. PERRELLA: I'm sorry. I think
14 protocol dictates I show it to you.

15 (Whereupon, the above-referred to
16 Order on Consent was handed from the Hearing
17 Officer to Mr. Nicosia.)

18 MR. NICOSIA: No objection.

19 THE HEARING OFFICER: Please mark
20 that Exhibit 3.

21 (Whereupon, the above-referred to
22 Order on Consent, was marked as Department's
23 Exhibit 3 in evidence)

24 THE HEARING OFFICER: Continue, please.

25 MR. PERRELLA: At this time, I would

1
2 like to introduce Department's witness,
3 Mr. David Obrig. Could we swear in the
4 witness.

5 D A V I D O B R I G, a witness in behalf of the
6 Department of Health Services, having been duly
7 sworn by a Notary Public of the State of New York,
8 upon being examined, testified as follows:

9 MR. FERRELLA: Can you state your
10 name?

11 MR. OBRIG: David Obrig.

12 MR. FERRELLA: Your connection with
13 the Department of Health Services?

14 MR. OBRIG: I am a Public Health
15 Sanitarian.

16 MR. FERRELLA: Your job duties
17 entail?

18 MR. OBRIG: Inspection of industrial
19 facilities for compliance with Suffolk
20 County Sanitary Code and New York State
21 Conservation Law.

22 MR. FERRELLA: Mr. Obrig, on
23 January 21, 1982, did you happen to visit
24 Respondent's facility, Spectrum Finishing
25 Corporation?

1
2 MR. OBRIG: I did.

3 MR. PERRELLA: Could you inform us
4 as to why you were there and what you found?

5 MR. OBRIG: That during the normal
6 course of my duties, I would be going through
7 that area, and as I was driving through the
8 alleyway between the two industrial
9 buildings on that site, I observed the viola-
10 tion.

11 MR. NICOSIA: Objection. He has
12 concluded that it was a violation. I would
13 ask him that he testify to what he observed
14 and what he saw.

15 THE HEARING OFFICER: I agree.

16 MR. OBRIG: Okay. Do you want me
17 to --

18 THE HEARING OFFICER: Testify it.

19 MR. OBRIG: I observed an electric
20 pump set up on a 55-gallon drum with a
21 green garden-type hose of approximately
22 one-half inch to three-quarter inch diameter,
23 leading under the garage type door on the east
24 side of Spectra Finishing. There was a
25 black hose going from that same pump, which

1
2 was approximately one to one and-a-half
3 inch diameter, leading into a gray PVC tank
4 which was approximately four feet by four
5 feet by twelve feet, outside on the ground.

6 I observed a white cylindrical plastic
7 type tank, which was approximately three feet
8 in radius and six feet high, outside on the
9 ground, and that was approximately half full
10 with dark liquid.

11 MR. PERRELLA: Mr. Obrig --

12 MR. OBRIG: Can I finish?

13 Liquid in the gray PVC tank was
14 approximately 12 to 18 inches high; the
15 coloring was orange, orange-brown. Ph of
16 that material was 12. I also took a sample
17 of the same, the liquid inside the PVC
18 tank. I also observed a greenish liquid
19 discoloration under the snow - there was
20 snow on the ground at the time - and that
21 appeared to be leading to a storm drain
22 which was located approximately four feet
23 from the gray PVC tank.

24 MR. PERRELLA: Mr. Obrig--

25 THE HEARING OFFICER: I have a question.

9

1
2 that was served upon us with the Notice of
3 Formal Hearing.

4 MR. FERRELLA: Mr. Hearing Officer,
5 if I may --

6 MR. NICOSIA: There is no alleged
7 violation of the time testified to on
8 January 21, 1982.

9 THE HEARING OFFICER: That was my
10 question.

11 MR. FERRELLA: Paragraph Four of the
12 Complaint alleges that toxic or hazardous
13 materials were stored out of doors at
14 Respondent's facility on January 21, 1982,
15 and subsequent dates.

16 THE HEARING OFFICER: All right. I
17 see it.

18 MR. FERRELLA: I wish to ask Mr. Obrig
19 what relevance the field Ph, which you
20 alluded to, is to this hearing? Why did
21 you take a field Ph and what is it?

22 MR. OBRIG: A field Ph is testing
23 the acidity or alkalinity of a liquid.
24 Normal procedure to carry such paper in the
25 car.

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2 MR. PERRELLA: Mr. O'rig, you gave
3 a reading of a Ph. That Ph reading was --

4 MR. OBRIG: Twelve.

5 MR. PERRELLA: That level 12 is
6 considered -- could you give some sort of
7 explanation to the hearing here why - what
8 12 signifies?

9 MR. OBRIG: It's highly alkaline,
10 very basic.

11 MR. PERRELLA: Is there some sort of
12 limitation on discharges as to Ph levels?

13 MR. OBRIG: Well, there's a limitation
14 on classification of toxic or hazardous
15 materials.

16 MR. PERRELLA: I am just questioning,
17 you took a field Ph, and I would like to
18 know the reason for taking the Ph and your
19 interpretation of that reading.

20 MR. OBRIG: The interpretation of
21 the reading was that that was a violation,
22 to be considered a toxic or hazardous material
23 if it was of that Ph.

24 MR. PERRELLA: Why is that a violation?

25 MR. OBRIG: It's a violation of the

Suffolk County Sanitary Code, Article 12.

MR. NICOSIA: Mr. Corbin, I am going to object to this testimony unless he can establish what are the criteria established by the Nassau County Sanitary Code.

THE HEARING OFFICER: Suffolk County.

MR. NICOSIA: (Continuing) Suffolk County Sanitary Code that constitute a violation.

MR. PENNELLA: I wish to introduce into evidence for the Hearing Officer's attention, Article 12, Section 1205 and Section 1203(k) of the Suffolk County Sanitary Code. I will read -- is it necessary to introduce the code itself into evidence?

THE HEARING OFFICER: No. The Code is a document that is well-known to the Department of Health Services.

If counsel would like a copy, I think we could break for a second and we could Xerox a copy for him.

(Whereupon, the above-referred to document was handed from Mr. Perrella to Mr. Nicosia.)

THE HEARING OFFICER: Off the record.

(Discussion held off the record)

MR. NICOSIA: Fine. We can continue.

THE HEARING OFFICER: Very good.

MR. NICOSIA: Counsel admits that Section 1205 of the Health Code is --

THE HEARING OFFICER: Stipulates to the toxicity of the material in question.

MR. NICOSIA: Doesn't talk about toxicity or alkalinity. It talks about illegal discharging. It talks in terms of no illegal discharge.

MR. PERRELLA: Section 1205(a) states: It shall be unlawful for any person to discharge toxic or hazardous materials unless such discharge is specifically in accordance with the State Pollutant Permit, S.P.D.E.S. permit, and Section 1203(k) identifies toxic or hazardous materials as being, among other things, acids and alkalis

1
2 beyond the Ph range of 6.5 to 8.5. Therefore,
3 I wish to bring to the Hearing Officer's
4 attention that the Ph of 12 as indicated by
5 Mr. Obrig was in excess of the 6.5 to 8.5
6 Ph range.

7 Mr. Obrig, on January 2nd, you
8 mentioned that you -- January 21st, you
9 mentioned that you had noticed outdoor
10 storage; that a Ph was taken; that it was in
11 excess of -- it was a Ph of 12, which we have
12 just determined is in excess of allowable
13 discharge limits, on that date. Is there
14 anything else that you did see or work that
15 you performed at the site?

16 MR. OBRIG: I took a sample from the
17 gray PVC tank.

18 MR. PERRELLA: Do you have results
19 of that sample analysis?

20 MR. OBRIG: Yes, I do.

21 MR. PERRELLA: Mr. Hearing Officer,
22 I would like to introduce as Exhibit B,
23 a copy of a sample analysis performed by
24 the Suffolk County Laboratory, of a sample
25 taken by Mr. Obrig on January 21st from a

nd

1
2 PVC tank, located at Respondent's facility.
3 I wish to bring your attention to the fact
4 that the sample analysis indicates the
5 presence --

6 MR. NICOSIA: Mr. Corbin, until it
7 has been introduced into evidence, I would
8 object to any comments on it.

9 THE HEARING OFFICER: I agree.

10 (Whereupon, the above-referred to
11 document was handed from Mr. Ferrella to
12 Mr. Nicosia)

13 MR. NICOSIA: No objections.

14 THE HEARING OFFICER: Mark this
15 as Exhibit 4.

16 (Whereupon, the above-referred to
17 analysis report was marked as Department's
18 Exhibit 4 in evidence)

19 MR. FERRELLA: Mr. Hearing Officer,
20 I wish to bring your attention to the
21 fact that the levels of metals present
22 there, and if you want me, reiterate what
23 we've got. Presence of copper, 1,900
24 milligrams per liter. Lead -- rather,
25 cadmium -- sorry -- 58,000 milligrams per

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2 liter. Zinc, 70 milligrams per liter.
3 Nickel, 75 grams per liter. Chromium,
4 65 milligrams per liter. Iron, 900 milligrams
5 per liter. The levels indicated ~~is~~ the
6 sample analysis represent the presence of
7 heavy and toxic metals in excess of standards
8 permitted in the Suffolk County Sanitary
9 Code and the New York State Environmental
10 Conservation Law.

11 I wish also to bring your attention --

12 MR. NICOSIA: Objection.

13 THE HEARING OFFICER: Hold on a
14 minute.

15 MR. NICOSIA: You have not established
16 that the percentages found in this test
17 solution exceed the limits permitted by
18 either the state or the county.

19 THE HEARING OFFICER: That is correct.

20 MR. PERRELLA: Article 12, Section
21 1205, which I referred to earlier, states:

22 It shall be unlawful for anyone to
23 discharge toxic or hazardous materials in
24 excess of New York State discharge standards,
25 and again, 1203(k) states that toxic or

10
2 hazardous means, any material which because
3 of its chemical or infectious characteristics
4 may be a potential hazard to the drinking
5 water supply. This includes but is not
6 limited to a list of hazardous substances
7 found in Part 116, Title 40 of the Code of
8 Federal Regulations. And heavy metal
9 waste and solutions -- and I don't think
10 it's necessary to go on through the whole
11 rest of it.

12 THE HEARING OFFICER: I believe the
13 question that was raised, if you have
14 1,000 milligrams per liter, what is the
15 minimum? How did he exceed?

16 MR. PERRELLA: I don't have a copy
17 of the New York State discharge standards
18 with me right now. The limit set forth
19 for these metals are present in the -- is
20 it on here? It's on the original --

21 MR. DE CHIRICO: It's on the back.

22 MR. PERRELLA: The levels are on the
23 back; however, I'm trying to refer to what
24 part and section of the Environmental
25 Conservation Law. It's Part 754. I would

17

not like to be held to that; however, the allowable limits for copper stated in the New York State discharge standards is one milligram per liter. The allowable limit for iron is .6 milligrams per liter. The allowable limit for nickel is two milligrams per liter; for zinc, five milligrams per liter and for cadmium, .02 milligrams per liter, and --

MR. NICOSIA: Mr. Corbin, I am going to object to all of this testimony having to do with the allowable limits. The man is reading from a document not in evidence and does not constitute the allowable higher limit of metal permitted under County or State law. I am really repeating the objection I made earlier.

MR. FERRIELLA: I wish to state that the Article 12 is clear and concise as to what is allowable discharge and what is a toxic or hazardous material, and the Article 12 refers to the New York State Environmental Conservation Law from which I have just been reading the allowable limits that are the

upper level permitted for any discharge.

THE HEARING OFFICER: Do you wish to submit that as part of the evidence, and I will weigh it accordingly?

MR. PERRELLA: Yes, sir. I wish to introduce as Exhibit 5, a copy of the schedule one for discharge standards of heavy metals.

(Whereupon, the above-referred to document was handed from Mr. Perrella to the Hearing Officer)

THE HEARING OFFICER: Is it both sheets?

MR. PERRELLA: No.

(Whereupon, the above-referred to document was handed from the Hearing Officer to Mr. Nicosia.

MR. PERRELLA: The back.

MR. NICOSIA: I know it is on the back. I am going to object to it. That does not constitute evidence of what the higher allowable limits under State or County Law is.

MR. PERRELLA: Mr. Hearing Officer --

1
2 THE HEARING OFFICER: For the record,
3 could you clarify where this document --

4 MR. PERRELLA: That is a photocopy
5 of the page.

6 THE HEARING OFFICER: (Continuing) --
7 came from?

8 MR. PERRELLA: From the Part which,
9 I believe, it's Part 750. I don't know
10 the Article of the New York State Environmental
11 Conservation Law.

12 THE HEARING OFFICER: I will take
13 your objection under advisement and I will
14 weigh this accordingly.

15 MR. PERRELLA: Mr. Obrig --

16 THE HEARING OFFICER: The actual
17 test from the laboratory, the analysis,
18 where is that?

19 MR. PERRELLA: This is January 26th.
20 We are still on January 21st. I thought
21 we marked it in evidence before.

22 THE HEARING OFFICER: Yes, but I
23 don't have it. I gave it back to you to
24 read from. In the future, I would appreciate
25 it if you made three copies of what you are

20

going to submit so you can give counsel and myself appropriate copies.

MR. PERRELLA: All right.

Mr. Obrig, did you happen to visit Respondent's facility again subsequent to January 21st of 1982? To be more specific, did you visit Respondent's facility on January 26th?

MR. OBRIG: Yes, I did. I went down to Spectrum Finishing on the 26th of January at approximately 1:15 p.m. I removed a sample from the storm drain located approximately 15 feet northeast of Spectrum's garage door, located on the Dale Street side of the building. The field Ph at that time was approximately 12. I also found that the gray PVC tank was still located on the northeast of the garage door. It contained four to six inches of frozen, yellow liquid with a Ph of approximately 12.

MR. PERRELLA: Mr. Obrig, was the Respondent storing toxic or hazardous materials out of doors?

MR. OBRIG: By the definitions already

submitted, yes.

MR. NICOSIA: I object to the question and to the answer. The answer asks for a conclusion and the answer is a conclusion.

THE HEARING OFFICER: Sustained.

MR. PERRELLA: I wish to bring the Hearing Officer's attention to the fact that administrative hearings do not follow the rigid rules of evidence and procedure that a courtroom proceeding would adhere to; that the rules and evidence and testimony and evidence is by tradition and has been upheld in court precedent to be as more relaxed and more informal than the rules of evidence as presented in a formal proceeding. Therefore, I feel that counsel's objection to the type of questioning that is progressing here should not be adhered to, and I think that counsel should be advised that the rigid rules of evidence are not required.

MR. NICOSIA: May I respond?

THE HEARING OFFICER: Surely.

MR. NICOSIA: Mr. Corbin, I understand

2 this is an administrative hearing, and I
3 understand that the rules of evidence do not -
4 the formal rules of evidence that apply in
5 a courtroom, do not necessarily apply in
6 an administrative hearing; but I also
7 suggest to you that you possess the power to
8 sizable money fines and that there is a
9 degree of formality of proof that is required,
10 and that conclusory statements should not be
11 permitted by you to the aim of the Department
12 of Environmental Conservation.

13 THE HEARING OFFICER: I agree, and
14 I do not think we should fence any longer.
15 Can we go off the record for a moment.

16 (Discussion held off the record)

17 (Whereupon, at 2:16 p.m., a recess
18 was taken)

19 (Whereupon, at 3:14 p.m., the within
20 hearing was resumed)

21 MR. NICOSIA: Mr. Ferrella, do you
22 want me to dictate to the stenographer
23 what I believe to be the agreement or do
24 you want to do it?

25 MR. FERRILLA: I will do it.

23

Off the record.

(Discussion held off the record)

MR. PERRELLA: Mr. Hearing Officer, I believe, while we were in recess, the Department and Spectrum Finishing did come into terms of agreement that we would like to issue or rather put on the record right now, and after I introduce what I believe are the terms of the agreement, if you could ask Spectrum Finishing if, in fact, they are the correct terms and if they agree and concur.

THE HEARING OFFICER: Fine.

MR. PERRELLA: The terms are as follows:

Number One, by June 25, 1982, Respondent shall have abandoned the storm drain located approximately 15 feet northwest of Respondent's garage door, which is located on the east side of Respondent's facility. Respondent shall effectuate the abandonment of this storm drain by filling in the storm drain with clean soil to within approximately six feet so as to permit the

1
2 installation of a non-porous prefabricated,
3 concrete holding tank, which will be piped
4 to pre-existing storm drains or - I'm sorry -
5 a pre-existing storm drain or storm drains.
6 located at Respondent's facility. This
7 installation shall be performed in a workman-
8 like manner so as to prevent the discharge
9 of any rainwaters or other liquids into the
10 ground located at the aforementioned storm
11 drain which is being filled in.

12 THE HEARING OFFICER: Off the record.

13 (Discussion held off the record)

14 MR. FERRELLA: Item Number Two:

15 By May 21, 1982, Respondent shall have
16 installed a solid, non-porous storm drain
17 cover over the aforementioned storm drain
18 to prevent accidental or intentional dis-
19 charges into that storm drain.

20 MR. NICOSIA: Off the record.

21 (Discussion held off the record)

22 MR. FERRELLA: The purpose of the
23 solid cover is to act as an interim
24 corrective measure to prevent discharges
25 into the storm drain prior to its abandonment

1
2 and installation of a solid tank.

3 Item Number Three: By June 11, 1982,
4 Respondent shall have submitted to this
5 Department applications pursuant to Article
6 12 of the Suffolk County Sanitary Code so
7 as to bring Respondent's facility into
8 compliance - excuse me. Strike - so as
9 to bring Respondent's storage of toxic or
10 hazardous materials at Respondent's facility
11 into compliance with Article 12.

12 Item Number Four: By May 19th, in
13 satisfaction of Department's violations
14 alleged in this formal hearing, in addition
15 to the aforementioned items contained in
16 this stipulation and agreement, Respondent
17 shall submit to the Department a check in
18 the sum of \$1,000 civil penalty.

19 Off the record.

20 (Discussion held off the record)

21 MR. PENRELLA: I believe that
22 concludes the agreement.

23 THE HEARING OFFICER: That is your
24 recommendation to the Commissioner.

25 MR. PENRELLA: Yes.

26

1
2 MR. NICOSIA: I, as counsel for the
3 Respondent, consent to those terms;
4 recommend that they be approved by Mr. Corbin,
5 if that is required in this proceeding.

6 THE HEARING OFFICER: It is, and it
7 is further required by me that you understand
8 all the aforementioned statements by both
9 parties, and you do agree as vice president
10 of this firm?

11 MR. DE CHIRICO: That's correct.

12 THE HEARING OFFICER: You have the
13 authority to accept this?

14 MR. DE CHIRICO: As an officer of
15 the company, I do..

16 THE HEARING OFFICER: Very good.

17 (Whereupon, at 3:23 p.m., the within
18 hearing was concluded)

19 * * * * *

EXHIBITS

Department's in
Evidence

Description

Page No.

1

Notice of Formal
Hearing.

2

2

Designation.

3

3

Order on Consent.

6

4

Analysis report.

16

CERTIFICATE OF REPORTER.

I, DENISE MURTHA, hereby certify that the within hearing was held before me on the 11th day of May, 1982.

That the witness herein, DAVID OBRIS, was duly sworn before the commencement of his testimony; that the testimony was taken stenographically by myself and then transcribed by myself; that the parties were represented by counsel as appears herein.

That the within transcript is a true record of the within hearing and testimony of said witness.

That I am not connected by blood or marriage with any of the parties. I am not interested directly or indirectly in the matter in controversy, nor am I in the employ of any of the counsel.

IN WITNESS WHEREOF, I have hereunto set my hand this 22nd day of June 1982.

Denise Murtha
DENISE MURTHA

REFERENCE NO. 22



TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc.

REPORT OF TESTS

Date: May 27, 1987

Lab. No.: 87-13417(D)

Client	Spectrum Finishing Corp.
Material	Ten (10) Soil Samples
Identification	See The Following Page (Samples Received 4/29/87)
Client's Order No.	Pending
Submitted for	<u>Chemical Analysis</u>

(For Results, see the following page)

CERTIFICATION

We certify that this report is a true report of results obtained from our tests of this material.

Respectfully submitted,

Nytest Environmental Inc.


Remo Gigante
Laboratory Director

To:

Spectrum Finishing Corp.
50 Dale St.
Babylon, N.Y. 11704
Att: Mr. W. DeChirico

jw

Report on sample(s) furnished by client applies to sample(s). Report on sample(s) obtained by us applies only to lot sampled. Information contained herein is not to be used for reproduction except by special permission. Sample(s) will be retained for thirty days maximum after date of report unless specifically requested otherwise by client. In the event that there are portions or parts of sample(s) remaining after Nytest has completed the required tests, Nytest shall have the option of returning such sample(s) to the client at the client's expense.



Sample Identification	pH @ 20°C (1:1 Slurry)	Specific Conductance umhos/cm @ 20°C (1:1 Slurry)	Total Solids (mg/kg)	Chloride (mg/kg)	Cyanide (mg/kg)
MW-1 SS-1	6.03	119	784945	73	< 0.01
MW-1 SS-11	6.45	36	804119	15	< 0.01
MW-1 SS-5	5.83	21	915957	14	< 0.01
MW-2 SS-11	6.02	18	820094	11	< 0.01
MW-2 SS-5	4.55	104	921091	19	< 0.01
MW-3 SS-1	5.65	146	799566	18	< 0.01
MW-3 SS-11	5.44	19	844600	15	< 0.01
MW-3 SS-5	6.15	32	874050	15	< 0.01
MW-4 SS-11	5.76	18	863180	28	< 0.01
MW-4 SS-5	5.78	20	881419	26	< 0.01

< = Less than



TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc.

Page: 3

Lab. No.: 87-13417(D)

<u>Parameters</u>	<u>Sample ID.</u>	<u>Sample Results</u>	<u>Duplicate Results</u>	<u>RPD (%)</u>
pH	MW-3 SS-1	5.65	5.66	0.2
Specific Conductance	MW-4 SS-5	20	21	4.9
Total Solids	MW-4 SS-11	86.3	86.1	0.6
Chloride	MW-1 SS-5	14	18	25.0
Cyanide	MW-4 SS-5	< 0.01	< 0.01	0.0

< = Less than



TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc.

Page: 4

Lab. No.: 87-13417(D)

<u>Parameters</u>	<u>Spiked Sample Results</u>	<u>Sample Results</u>	<u>Spiked Added</u>	<u>% R</u>
Chloride	68	18	50	100
Cyanide	0.115	< 0.01	0.100	115

< = Less than



TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc.

Page: 5

Lab. No.: 87-13417(D)

<u>EPA Ampule</u>	<u>Parameters</u>	<u>True Value</u>	<u>Found</u>	<u>% R</u>
WP-1185	Chloride	51.7	51.7	100
WP-586	Cyanide	0.50	0.228 (1:2)	91.2

TITLE PH

5/1/87

Project No. _____

Book No. _____

Elsamma George 33

From Page No. _____

Date _____ Client _____ Lab# _____ Sample ID _____ PH _____ Spec. Color odor _____

standards

PH- 7

7.00

PH- 4

4.00

PH- 10

10.00

DI water

5.38

4/29 Spectrom Finishing 8713417 MW-3 SS-11 5.44

MW-1 SS-1 6.03

MW-4 SS-11 5.76

MW-1 SS-11 6.45

MW-2 SS-11 6.02

MW-2 SS-5 4.55

MW-4 SS-5 5.78

MW-3 SS-5 6.15

MW-1 SS-5 5.83

MW-3 SS-1 5.65

Duplicate CMW-3 SS-11 5.66

To Page No. _____

Witnessed & Understood by me.

Date

Invented by

Date

Recorded by

5/4/5

~~SPECIFIC CONDUCTANCE~~

CLIENT	ID	LAB	Sp. Lvl
Spectrum Finishing	SS1-MW1 4/21	87-13417	119
	SS1-MW3		146
	SS11-MW1		36
	SS11-MW2		18
	SS11-MW3		19
	SS11-MW4		18
	SS5-MW1		21
	SS5-MW2		104
	SS5-MW3		32
	SS5-MW4		20
	SS5-MW5		71
	MW1-DO 4/30		186
	MW2-SC		156
	MW3-DO		308
	TRIP BLANK		4
	FIELD BLANK		4
	FIELD BLANK DUPLICATE		4
	MW2-DO 5/1		173
	MW3-DO		166
	MW3-SC		120
	MW4-DO		166
	MW4-SC		500
	MW4-DO DUPLICATE		170

155

#	CLIENT	ID	DATE	LAB	TARE	Wt	105	T.S.
8	Nelson Mgt.		4/15	86-11617				
9								
10								
10A								

T.S.

T

#	CLIENT	ID	DATE	LAB	TARE	wt of sample	105	T.S.
1	Spectrum Fin.	SS-5 MW-1	4/19	87-13417	3.836	24.083	25.895	91.5957
2		SS-5 MW-2			3.760	21.113	23.207	92.191
3		SS-5 MW-3			3.747	20.913	22.026	92.1050
4		SS-5 MW-4			3.752	20.602	21.911	91.6119
5		SS-1 MW-1			3.733	21.441	20.563	91.4985
6		SS-1 MW-3			3.785	20.271	19.958	91.9956
7		SS-11 MW-1			3.544	21.538	21.139	91.0119
8		SS-11 MW-2			3.812	20.066	20.268	87.0094
9		SS-11 MW-3			3.789	20.193	20.844	84.1600
10		SS-11 MW-4			3.762	21.890	22.657	86.3180
10A		DUPLICATE			3.789	21.367	22.177	86.0579
11	Jersey City Water	SS-11 MW-4	4/21	87-13408	3.765	20.602	20.399	87.913
12	M.T. Service	CM-9601-1 CM-9601-2	4/28	87-13415	3.779	20.579	20.704	87.2440

6/8/87

171003

1102-110

Project No.

Book No.

TITLE

Chlorides

Lehman

From Page No.

col.	Client	Sample ID	Lab	Vol/wt	Tit	ppm
	Blank			100 ml	0.0	
	Std	180 ppm		50	13.02	185
		60 ppm		10.0	8.36	59
		15 ppm		100	2.31	16
A-20	N.J. water	MW1	87-12420	100	3.22	23
		MW2		100	3.06	22
		MW4		100	1.97	14
		MW3		100	2.92	20.7
		Dup		100	2.96	20
		Spike (60 ppm)		100 ml	3.30	60
		EPA (51.7 ppm)		100	7.34	52.0
4-29	Spectrum finishing	MW1 - SS1		1.361 g	0.14	73
		MW3 - SS1		5.020 g	0.13	18
		MW1 - SSII		5.068 g	0.11	15
		MW2 - SSII		4.978 g	0.08	11
		MW4 - SSII		5.548 g	0.22	28
		MW3 - SSII		5.062 g	0.11	15
		MW4 - SS5		5.533 g	0.20	26
		MW3 - SS5		5.866 g	0.11	15
		MW2 - SS5		5.208 g	0.14	19
		MW1 - SS5		5.471 g	0.11	14
		Dup		5.500	0.14	18
		Spike (50 ppm)		5.500	0.42	50 ppm (rechecked)

RPD = 1.43

%R = 100%

[AgNO₃] = 0.0201 N

To Page No.

Witnessed & Understood by me.

Date

Invented by

Date

Recorded by

TITLE

CYANIDE

Project No. P.7.
Book No. 5/2

19

m Page No.

RECD. CLIENT LAB SAMPLE DILUTIONS RDOUT. APIM

S ₁	.4	CON = <u>.9973</u>	90.8	.41
S ₂	.3		64.7	.30
S ₃	.2		38.5	.19
S ₄	.1		16.7	.10
S ₅	.05		9.3	.06

EPA [224] (old EPA ampule-degraded) 34 .168 75%

4/29	SPECTRUM	13417	MW-1 S-1	<u>4.125</u> 100	—	<.01	
B	n	11	n	MW-1 S-5	<u>3.464</u> 100	—	<.01
B	n	4	n	MW-1 S-11	<u>6.28</u> 100	—	<.01
B	n	11	n	MW-2 S-5	<u>5.297</u> 100	—	<.01
B	n	4	n	MW-2 S-11	<u>4.316</u> 100	—	<.01
B	n	11	n	MW-3 S-1	<u>4.223</u> 100	—	<.01
B	n	11	n	MW-3 S-5	<u>7.037</u> 100	—	<.01
B	n	11	n	MW-3 S-11	<u>4.356</u> 100	—	<.01
B	n	11	n	MW-4 S-11	<u>8.504</u> 100	0.7	0.33
B	11	11	n	MW-4 S-5	<u>7.371</u> 100	—	<.01
B	n	11	n	DUP	<u>7.371</u> 100	—	<.01
B	n	11	n	SPike .1	"/.1	21.5	0.115
B	n	11	n	STD. [1] ST		19.8	0.108

To Page No.

Witnessed & Understood by me.

Date

Invented by

Recorded by

Date

RPD = 0.0

SAK 0.1 R = 115%

CONT.

20

Project No. P.T.
Book No. 5/2TITLE CYANIDE

From Page No.

REC'D. CLIENT LAB SAMPLE DILUTIONS R/O OUT PPM

EPA [0.250]

48.3 0.228

4/22

CARICH

13320

M-1

ST.

— <0.1

b

n

n

n

n

M-2

ST.

— <0.1

b

n

n

n

n

M-3

ST.

— <0.1

b

n

n

n

n

M-4

ST.

— <0.1

b

n

n

n

n

M-5

ST.

— <0.1

b

n

n

n

n

M-6

ST.

— <0.1

b

n

n

n

n

M-7

ST.

— <0.1

b

n

n

n

n

M-8

ST.

5.5 0.05

b

n

n

n

n

M-9

ST.

— <0.1

b

n

n

n

n

M-10

ST.

— <0.1

b

n

n

n

n

M-11

ST.

— <0.1

b

n

n

n

n

M-12

ST.

— <0.1

b

n

n

n

n

M-13

ST.

— <0.1

b

n

n

n

n

M-14

ST.

— <0.1

b

n

n

n

n

M-15

ST.

— <0.1

b

n

n

n

n

M-16

ST.

— <0.1

b

n

n

n

n

M-17

ST.

— <0.1

b

n

n

n

n

M-18

ST.

— <0.1

b

n

n

n

n

M-19

ST.

— <0.1

b

n

n

n

n

M-20

ST.

— <0.1

b

n

n

n

n

M-21

ST.

— <0.1

b

n

n

n

n

M-22

ST.

— <0.1

b

n

n

n

n

M-23

ST.

— <0.1

b

n

n

n

n

M-24

ST.

— <0.1

b

n

n

n

n

M-25

ST.

— <0.1

b

n

n

n

n

M-26

ST.

— <0.1

b

n

n

n

n

M-27

ST.

— <0.1

b

n

n

n

n

M-28

ST.

— <0.1

b

n

n

n

n

M-29

ST.

— <0.1

b

n

n

n

n

M-30

ST.

— <0.1

b

n

n

n

n

M-31

ST.

— <0.1

b

n

n

n

n

M-32

ST.

— <0.1

b

n

n

n

n

M-33

ST.

— <0.1

b

n

n

n

n

M-34

ST.

— <0.1

b

n

n

n

n

M-35

ST.

— <0.1

b

n

n

n

n

M-36

ST.

— <0.1

b

n

n

n

n

M-37

ST.

— <0.1

b

n

n

n

n

M-38

ST.

— <0.1

b

n

n

n

n

M-39

ST.

— <0.1

b

n

n

n

n

M-40

ST.

— <0.1

b

n

n

n

n

M-41

ST.

— <0.1

b

n

n

n

n

M-42

ST.

— <0.1

b

n

n

n

n

M-43

ST.

— <0.1

b

n

n

n

n

M-44

ST.

— <0.1

b

n

n

n

n

M-45

ST.

— <0.1

b

n

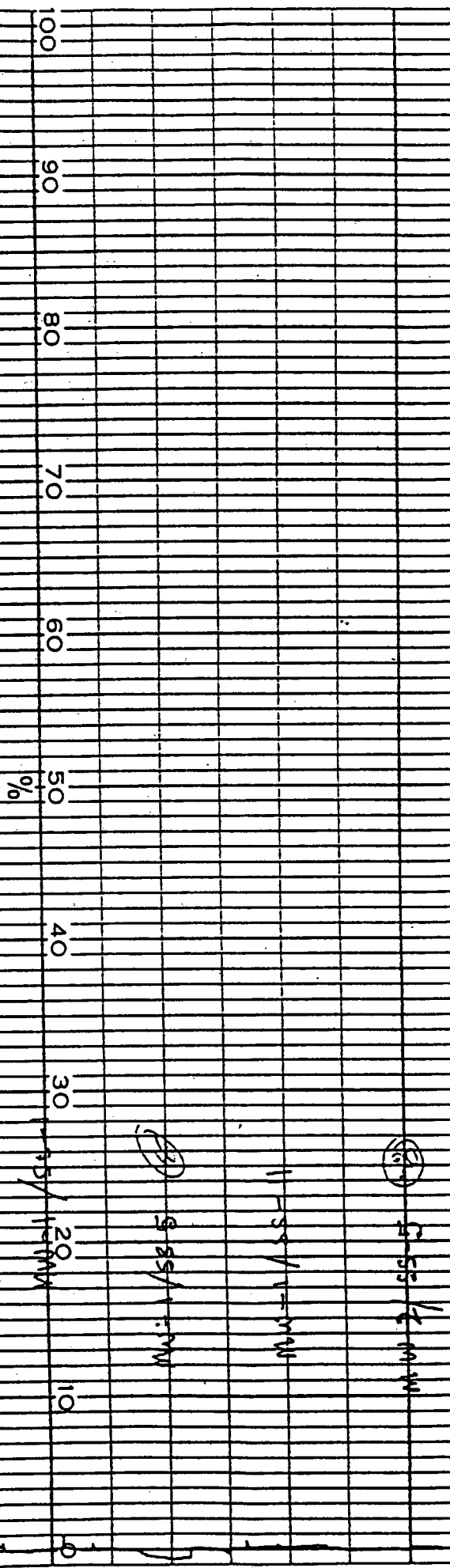
n

n

n

M-46

ST.



(ppm) = 115) 7.210 ACF

CHLORIDE

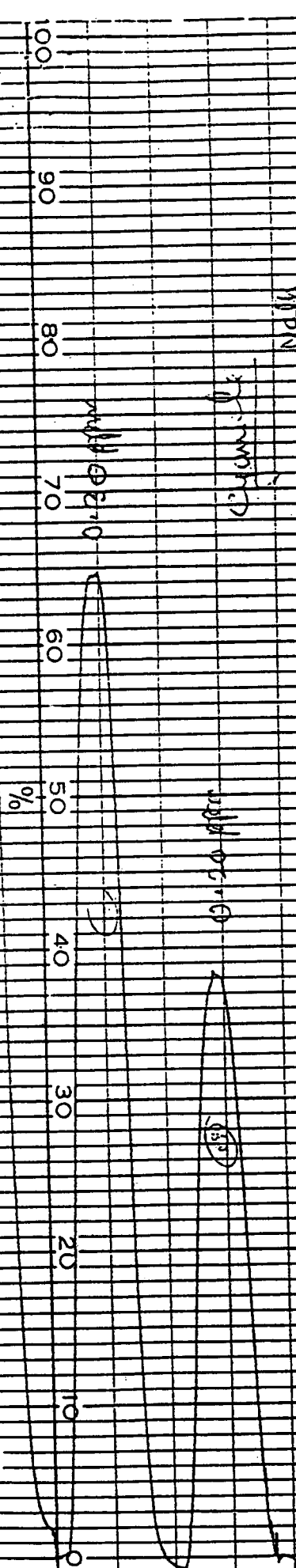
11/17/71
11/17/71

11-SS/1-MW

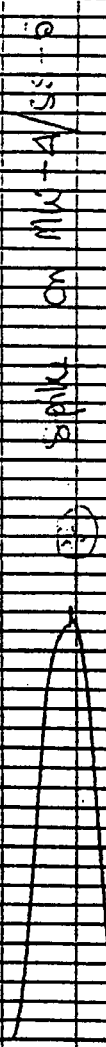
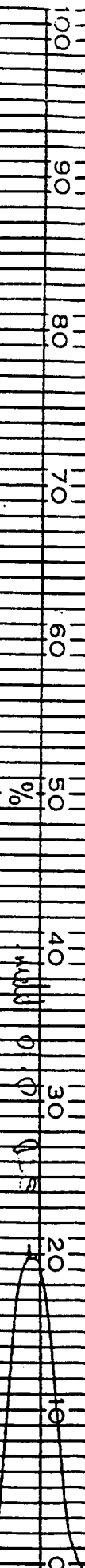
11-SS/1-MW

11-SS/1-MW

11-SS/1-MW



max deflection (mm)



(3.5) 5-55/17 mm

(2.5) 5-55/17 mm

1-55/17 mm

(4.5) 5-55/17 mm

9-20/17 mm

(2.5)

1-55/17 mm

11-55/17 mm

(3.5) 5-55/17 mm



TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc.

REPORT OF TESTS

Date: May 27, 1987

Lab. No.: 87-13417(E)

Client	Spectrum Finishing Corp.
Material	Water, Sand & Soil Sample
Identification	See The Following Pages (Samples Received 4/29/87)
Client's Order No.	Pending
Submitted for	<u>Chemical Analysis</u>

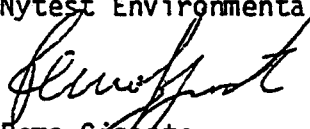
(For Results, see the following pages)

CERTIFICATION

We certify that this report is a true report of results obtained from our tests of this material.

Respectfully submitted,

Nyttest Environmental Inc.


Remo Gigante
Laboratory Director

To:
Spectrum Finishing Corp.
50 Dale St.
Babylon, N.Y. 11704
Att.: Mr. W. DeChirico

jw

Report on sample(s) furnished by client applies to sample(s). Report on sample(s) obtained by us applies only to lot sampled. Information contained herein is not to be used for reproduction except by special permission. Sample(s) will be retained for thirty days maximum after date of report unless specifically requested otherwise by client. In the event that there are portions or parts of sample(s) remaining after Nytest has completed the required tests, Nytest shall have the option of returning such sample(s) to the client at the client's expense.

COVER PAGEANALYTICAL DATA PACKAGELab Name Nytest Environmental Inc.

Case No. _____

SOW No. _____

Q.C. Report No. 00112-87Sample Numbers

<u>SFC No.</u>	<u>Lab ID No.</u>		<u>SFC No.</u>	<u>Lab ID No.</u>
MW1-SS-1 Soil	87-13417(E)	1	MW1-SS-5 Sand	87-13417(E)
MW1-SS-11 Sand	87-13417(E)	1	MW2-DM	87-13417(E)
MW2-SS-11 Sand	87-13417(E)	1	MW3-DM	87-13417(E)
MW2-SS-5 Sand	87-13417(E)	1	MW3-SM	87-13417(E)
MW3-SS-1 Soil	87-13417(E)	1	MW4-DM	87-13417(E)
MW3-SS-11 Sand	87-13417(E)	1	MW4-SM	87-13417(E)
MW3-SS-5 Sand	87-13417(E)	1	Field Blank	87-13417(E)
MW4-SS-5 Sand	87-13417(E)	1	MW1-DM	87-13417(E)
MW4-SS-11 Sand	87-13417(E)	1	MW2-SM	87-13417(E)

Comments: _____

Form I:

Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]). Indicate the analytical method used with P (for ICP/Flame AA) or F (for furnace).

U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., IOU).

E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.

S - Indicates value determined by Method of Standard Addition.

R - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

Date May 27, 1987COVER PAGEANALYTICAL DATA PACKAGELab Name Nytest Environmental Inc.

Case No. _____

SOW No. _____

Q.C. Report No. 00112-87Sample Numbers

<u>SFC. No.</u>	<u>Lab ID No.</u>		<u>SFC. No.</u>	<u>Lab ID No.</u>
MW 15-M	87-13417(E)	1		
		1		
		1		
Trip Blank	87-13417(E)	1		
		1		
		1		
		1		
		1		
		1		
		1		
		1		
		1		
		1		
		1		
		1		
		1		
		1		

Comments: _____

Form I:

Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]). Indicate the analytical method used with P (for ICP/Flame AA) or F (for furnace).

U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., IOU).

E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.

S - Indicates value determined by Method of Standard Addition.

R - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

MW1-SS-1

Sample No.

Soil 4/29/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SCW NO. _____

LAB SAMPLE ID NO. MW1-SS-1QC REPORT NO. 00112-87Elements Identified and MeasuredConcentration: Low _____ Medium XMatrix: Water _____ Soil X Sludge _____ Other _____

ug/L or (ug/kg) dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	3.95
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	1.27	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	9.04	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	5.73	22. Tin	NR
11. Iron	6591	23. Vanadium	NR
12. Lead	27.4	24. Zinc	36.1
Cyanide		Percent Solids (1)	78.49

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDOC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab. No. 87-13417(E)

MW1 -SS-11

Sample No.

Sand 4/29/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SCW NO. _____

LAB SAMPLE ID NO. MW1-SS-11QC REPORT NO. 00112-87

Elements Identified and Measured

Concentration: Low _____ Medium XMatrix: Water _____ Soil X Sludge _____ Other _____

ug/L or (mg/kg) dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	0.015 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	0.003 u	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	2.98	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	0.010 u	22. Tin	NR
11. Iron	1670	23. Vanadium	NR
12. Lead	0.001 u	24. Zinc	5.22
Cyanide		Percent Solids (1)	80.41

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW2-SS-11

Sample No.

Sand 4/29/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SCW NO. _____

LAB SAMPLE ID NO. MW2-SS-11QC REPORT NO. 00112-87Elements Identified and MeasuredConcentration: Low _____ Medium XMatrix: Water _____ Soil X Sludge _____ Other _____ug/L or ug/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	0.015 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	0.003 u	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	3.56	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	1.58	22. Tin	NR
11. Iron	1854	23. Vanadium	NR
12. Lead	0.001 u	24. Zinc	6.09
Cyanide		Percent Solids (1)	82.00

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDOC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW2-SS-5.

Sample No.

Sand 4/29/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SCW NO. _____

LAB SAMPLE ID NO. MW2-SS-5QC REPORT NO. 00112-87Elements Identified and MeasuredConcentration: Low _____ Medium XMatrix: Water _____ Soil X Sludge _____ Other _____ug/L or (ug/kg) dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	0.015 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	0.003 u	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	4.67	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	30.0	22. Tin	NR
11. Iron	1155	23. Vanadium	NR
12. Lead	12.2	24. Zinc	5.53
Cyanide		Percent Solids (1)	92.10

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW3-SS-1

Sample No.

Soil 4/29/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SOW NO. _____

LAB SAMPLE ID NO. MW3-SS-1QC REPORT NO. 00112-87Elements Identified and MeasuredConcentration: Low _____ Medium XMatrix: Water _____ - Soil X Sludge _____ Other _____

ug/L or (mg/kg dry weight) (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	5.25
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	2.00	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	17.5	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	10.5	22. Tin	NR
11. Iron	6356	23. Vanadium	NR
12. Lead	11.5	24. Zinc	32.5
Cyanide		Percent Solids (%)	79.95

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW3-SS-11

Sample No.

Sand 4/29/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SCW NO. _____

LAB SAMPLE ID NO. MW3-SS-11QC REPORT NO. 00112-87Elements Identified and Measured

Concentration:

Low _____

Medium X

Matrix: Water _____

Soil X

Sludge _____

Other _____

µg/L or µg/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	0.015 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	0.003 u	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	4.38	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	0.010 u	22. Tin	NR
11. Iron	1612	23. Vanadium	NR
12. Lead	0.001 u	24. Zinc	6.63
Cyanide		Percent Solids (%)	84.46

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDOC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: _____

MW3-SS-5

Sample No.

Sand 4/29/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SOW NO. _____

LAB SAMPLE ID NO. MW3-SS-5QC REPORT NO. 00112-87Elements Identified and MeasuredConcentration: Low _____ Medium XMatrix: Water _____ Soil X Sludge _____ Other _____ug/L or ug/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	0.015 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	0.915	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	29.8	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	2.74	22. Tin	NR
11. Iron	1986	23. Vanadium	NR
12. Lead	0.001 u	24. Zinc	7.32
Cyanide		Percent Solids (%)	87.40

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW4-SS-5

Sample No.

Sand 4/29/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SOW NO. _____

LAB SAMPLE ID NO. MW4-SS-5QC REPORT NO. 00112-87Elements Identified and MeasuredConcentration: Low _____ Medium X
Matrix: Water _____ Soil X Sludge _____ Other _____ug/L or mg/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	4.08
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	1.36	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	3.63	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	8.28	22. Tin	NR
11. Iron	1428	23. Vanadium	NR
12. Lead	0.001 u	24. Zinc	6.69
Cyanide		Percent Solids (%)	88.14

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDOC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW4-SS-11

Sample No.

Sand 4/29/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SCW NO. _____

LAB SAMPLE ID NO. MW4-SS-11QC REPORT NO. 00112-87Elements Identified and Measured

Concentration:

Low _____

Medium X

Matrix: Water _____

-Soil X

Sludge _____

Other _____

ug/L or (ng/kg) dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	0.015 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	0.811	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	6.14	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	12.0	22. Tin	NR
11. Iron	2890	23. Vanadium	NR
12. Lead	0.001 u	24. Zinc	17.4
Cyanide		Percent Solids (%)	86.31

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: _____

MW1-SS-5

Sample No.

Sand 4/29/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SCW NO. _____

LAB SAMPLE ID NO. MW1-SS-5QC REPORT NO. 00112-87Elements Identified and Measured

Concentration:

Low _____

Medium _____

X

Matrix: Water _____

-Soil _____

X

Sludge _____

Other _____

ug/L of mg/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	0.015 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	3 u	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	3.71	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	1.31	22. Tin	NR
11. Iron	2220	23. Vanadium	NR
12. Lead	0.001 u	24. Zinc	7.53
Cyanide		Percent Solids (%)	91.59

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW2_DM

Sample No.

Water 5/1/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SCW NO. _____

LAB SAMPLE ID NO. MW2 DMQC REPORT NO. 00112-87

Elements Identified and Measured

Concentration: Low X Medium _____
Matrix: Water X Soil _____ Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	15 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	45	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	10	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	41	22. Tin	NR
11. Iron	[39] P	23. Vanadium	NR
12. Lead	29	24. Zinc	109
Cyanide		Percent Solids (%)	

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW3 DM

Sample No.

Water 5/1/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SCW NO. _____

LAB SAMPLE ID NO. MW3 DMQC REPORT NO. 00112-87

Elements Identified and Measured

Concentration: Low X Medium _____
Matrix: Water X Soil _____ Sludge _____ Other _____ug/L or mg/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	15 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	16	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	14	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	56	22. Tin	NR
11. Iron	[33] P	23. Vanadium	NR
12. Lead	40	24. Zinc	339
Cyanide		Percent Solids (%)	

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW3 SM

Sample No.

Water 5/1/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SCW NO. _____

LAB SAMPLE ID NO. MW3 SMQC REPORT NO. 00112-87Elements Identified and MeasuredConcentration: Low X Medium _____
Matrix: Water X Soil _____ Sludge _____ Other _____ug/l or mg/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	15 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	11	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	36	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	139	22. Tin	NR
11. Iron	10 u	23. Vanadium	NR
12. Lead	1 u	24. Zinc	87
Cyanide		Percent Solids (%)	

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW4 DM

Sample No.

Water 5/1/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SOW NO. _____

LAB SAMPLE ID NO. MW4 DMQC REPORT NO. 00112-87Elements Identified and Measured

Concentration: Low X Medium _____

Matrix: Water X Soil _____ Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	15 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	6	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	26	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	83	22. Tin	NR
11. Iron	10 u	23. Vanadium	NR
12. Lead	1 u	24. Zinc	59
Cyanide		Percent Solids (1)	

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW4 SM

Sample No.

Water 5/1/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SOI NO. _____

LAB SAMPLE ID NO. MW4 SMQC REPORT NO. 00112-87Elements Identified and Measured

Concentration: Low X Medium _____

Matrix: Water X Soil _____ Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	15 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	99	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	30	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	147	22. Tin	NR
11. Iron	10 u	23. Vanadium	NR
12. Lead	1 u	24. Zinc	62
Cyanide		Percent Solids (%)	

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW1 DM

Sample No.

Water 4/30/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SCW NO. _____

LAB SAMPLE ID NO. MW1 DMQC REPORT NO. 00112-87Elements Identified and Measured

Concentration: Low X Medium _____

Matrix: Water X - Soil _____ Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	15 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	3 u	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	10	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	[15]P	22. Tin	NR
11. Iron	[34]P	23. Vanadium	NR
12. Lead	1 u	24. Zinc	40
Cyanide		Percent Solids (%)	

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Field Blank
Sample No.

Water 5/1/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SC# NO. _____

LAB SAMPLE ID NO. Field BlankQC REPORT NO. 00112-87Elements Identified and MeasuredConcentration: Low _____ Medium _____
Matrix: Water _____ Soil _____ Sludge _____ Other _____ug/L or mg/kg dry weight (Circle One)

1. Aluminum	NR	12. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	15 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	3 u	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	9 u	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	10 u	22. Tin	NR
11. Iron	10 u	23. Vanadium	NR
12. Lead	1 u	24. Zinc	2 u
Cyanide		Percent Solids (%)	

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDOC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW2 SM

Sample No.

Water 4/30/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Mytest Environmental Inc.

CASE NO. _____

SC# NO. _____

LAB SAMPLE ID NO. MW2 SMQC REPORT NO. 00112-87Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil _____ Sludge _____ Other _____

ug/l or mg/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	[28]P
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	[3]P	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	14	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	926	22. Tin	NR
11. Iron	[95]P	23. Vanadium	NR
12. Lead	1 u	24. Zinc	67
Cyanide		Percent Solids (%)	

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

MW15 M

Sample No.

Water 4/30/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SOW NO. _____

LAB SAMPLE ID NO. MW15 MQC REPORT NO. 00112-87Elements Identified and MeasuredConcentration: Low X Medium _____
Matrix: Water X Soil _____ Sludge _____ Other _____ug/L or mg/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	15 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	3 u	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	11	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	19	22. Tin	NR
11. Iron	[23]P	23. Vanadium	NR
12. Lead	1 u	24. Zinc	196
Cyanide		Percent Solids (1)	

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Trip Blank

Sample No.

Water 4/30/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Nytest Environmental Inc.

CASE NO. _____

SCW NO. _____

LAB SAMPLE ID NO. Trip BlankQC REPORT NO. 00112-87Elements Identified and Measured

Concentration:

Low _____

Medium _____

Matrix: Water _____

- Soil _____

Sludge _____

Other _____

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	NR	13. Magnesium	NR
2. Antimony	NR	14. Manganese	NR
3. Arsenic	NR	15. Mercury	NR
4. Barium	NR	16. Nickel	15 u
5. Beryllium	NR	17. Potassium	NR
6. Cadmium	3 u	18. Selenium	NR
7. Calcium	NR	19. Silver	NR
8. Chromium	9 u	20. Sodium	NR
9. Cobalt	NR	21. Thallium	NR
10. Copper	10 u	22. Tin	NR
11. Iron	[20] P	23. Vanadium	NR
12. Lead	38	24. Zinc	17
Cyanide		Percent Solids (1)	

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnote:

NR - not required by contract at this time

Footnote: For reporting results to NYSDEC, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: _____

Inorganic Form II

Q.C. Report No. 00112-87INITIAL AND CONTINUING CALIBRATION VERIFICATION¹LAB NAME NYTEST ENVIRONMENTAL

CASE NO. _____

SOW NO. _____

DATE _____

UNITS ug/L

EPA.	Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
		True Value	Found	SR	True Value	Found	SR	Found	SR	
Wp 284 Gn 2	1. Aluminum	728.0	NR		728.0					
Wp 1183 Gn 2	2. Antimony	101.5	NR		101.5					
Wp 284 Gn 2	3. Arsenic	235.0	NR		235.0					
Wp 581 Gn 2	4. Barium	10.0	NR		10.0					
Wp 284 Gn 2	5. Beryllium	235.0	NR		235.0					
Wp 284 Gn 2	6. Cadmium	39.0	36	92.3	39.0	40	102	40	102	
Wp 384 Gn 1	7. Calcium	40600.0	NR		40600.0					
Wp 284 Gn 2	8. Chromium	261.0	234	89.6	261.0	257	96	245	93.8	
	9. Cobalt		NR							
284 Gn 2	10. Copper	339.0	331	97.6	339.0	358	105	363	107	
284 Gn 2	11. Iron	797.0	837	105	797.0	775	97	761	95	
1178 Gn 1	12. Lead	43.0	NR		43.0					
384 Gn 1	13. Magnesium	8400.0	NR		8400.0					
284 Gn 2	14. Manganese	348.0	NR		348.0					
284 Gn 2	15. Mercury	8.73	NR		8.73					
284 Gn 2	16. Nickel	207.0	211	101.9	207.0	211	101.9	206	99.5	
384 Gn 1	17. Potassium	9800.0	NR		9800.0					
284 Gn 2	18. Selenium	50.2	NR		50.0					
1183 Gn 2	19. Silver	4.97	NR		4.97					
384 Gn 1	20. Sodium	46500.0	NR		46500.0					
1183 Gn 1	21. Thallium	30.0	NR		30.0					
	22. Tin		NR							
284 Gn 2	23. Vanadium	846	NR		846					
284 Gn 2	24. Zinc	418	387	92.6	418	411	98.3	413	98.5	
980 Gn 2	Other Antimony	97.5	NR		97.5					
284 Gn 2	Lead	435	427	98	442	442	100	464	105	
	Cyanide									

¹ Initial Calibration Source _____² Continuing Calibration Source: _____³ Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

000023

Inorganic Form III

Q.C. Report No. 00112-87

BLANKS

LAB NAME NYTEST ENVIRONMENTAL

CASE NO. _____

DATE _____

UNITS mg/KgMatrix Soil

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value				Preparation Blank	
		1	2	3	4	1	2
Metals:							
1. Aluminum	NR						
2. Antimony	NR						
3. Arsenic	NR						
4. Barium	NR						
5. Beryllium	NR						
6. Cadmium	.0034		.0034	.0034			
7. Calcium	NR						
8. Chromium	.0094		.0094	.0094			
9. Cobalt	NR						
10. Copper	.0104		.0104	.0104			
11. Iron	.0104		.0104	.0104			
12. Lead	.0014		.0014	.0014			
13. Magnesium	NR						
14. Manganese	NR						
15. Mercury	NR						
16. Nickel	.0154		.0154	.0154			
17. Potassium	NR						
18. Selenium	NR						
19. Silver	NR						
20. Sodium	NR						
21. Thallium	NR						
22. Tin	NR						
23. Vanadium	NR						
24. Zinc	.0024		.002	.0024			
Other							
Cyanide							

000024

Inorganic Form III

O.C. Report No. 00112-87

BLANKS

LAB NAME NYTEST ENVIRONMENTAL

CASE NO. _____

DATE _____

UNITS 43/LMatrix Water

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value				Preparation Blank	
		1	2	3	4	1	2
Metals:							
1. Aluminum	NR						
2. Antimony	NR						
3. Arsenic	NR						
4. Barium	NR						
5. Beryllium	NR						
6. Cadmium	3U	3U	3U				
7. Calcium	NR						
8. Chromium	9U	9U	9U				
9. Cobalt	NR						
10. Copper	10U	10U	10U				
11. Iron	10U	10U	10U				
12. Lead	1U	1U	1U				
13. Magnesium	NR						
14. Manganese	NR						
15. Mercury	NR						
16. Nickel	15U	15U	15U				
17. Potassium	NR						
18. Selenium	NR						
19. Silver	NR						
20. Sodium	NR						
21. Thallium	NR						
22. Tin	NR						
23. Vanadium	NR						
24. Zinc	2U	2U	2U				
Other							
Cyanide							

000025

Inorganic Form V

Q.C. Report No. 00112-87

SPIKE SAMPLE RECOVERY

LAB NAME NYTEST ENVIRONMENTAL

CASE NO.

SFC Sample No. MW4-SS-11

DATE _____

Lab Sample ID No. MW4-SS-11 SandUnits mg/kgMatrix Soil

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	%R
Metals:					
1. Aluminum	75-125	NR			
2. Antimony		NR			
3. Arsenic		NR			
4. Barium		NR			
5. Beryllium		NR			
6. Cadmium		.057	.007	.050	100
7. Calcium		NR			
8. Chromium		.268	.053	.200	107
9. Cobalt		NR			
10. Copper		.350	.104	.250	98.4
11. Iron		26.21	24.95	1.00	126.
12. Lead		NR			
13. Magnesium		NR			
14. Manganese		NR			
15. Mercury		NR			
16. Nickel		.472	.0154	.500	94.4
17. Potassium		NR			
18. Selenium		NR			
19. Silver		NR			
20. Sodium		NR			
21. Thallium		NR			
22. Tin		NR			
23. Vanadium		NR			
24. Zinc		.653	.150	.500	100.6
Other					
Cyanide					

$$^1 \%R = [(SSR - SR) / SA] \times 100$$

*R - out of control

000026

Comments: _____

Inorganic Form V

Q.C. Report No. 00112-87

SPIKE SAMPLE RECOVERY

LAB NAME NYTEST ENVIRONMENTAL

CASE NO. _____

DATE _____

S.F.C. Sample No. MW15-MLab Sample ID No. MW15-M 4-30Units 46/LMatrix Water

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	%R
Metals:					
1. Aluminum	75-125	NR			
2. Antimony		NR			
3. Arsenic		NR			
4. Barium		NR			
5. Beryllium		NR			
6. Cadmium		53	34	50	106
7. Calcium		NR			
8. Chromium		205	11	200	97
9. Cobalt		NR			
10. Copper		276	19	250	102.8
11. Iron		1044	23	1000	102
12. Lead		523	14	500	104.
13. Magnesium		NR			
14. Manganese		NR			
15. Mercury		NR			
16. Nickel		391	154	400	97.7
17. Potassium		NR			
18. Selenium		NR			
19. Silver		NR			
20. Sodium		NR			
21. Thallium		NR			
22. Tin		NR			
23. Vanadium		NR			
24. Zinc		410	196	200	107
Other _____					
Cyanide					

$$^1 \%R = [(SSR - SR) / SA] \times 100$$

"R" - out of control

000027

Comments: _____

Inorganic Form VI

Q.C. Report No. 00112-87

DUPLICATES

LAB NAME NYTEST ENVIRONMENTAL

CASE NO.

SFC Sample No. MW-4 SS-11

DATE _____

Lab Sample ID No. MW-4 SS-11 4-29

Units

mg/kgMatrix Soil

Compound	Control Limit ¹	Sample (S)	Duplicate (D)	RPD ²
Metals:				
1. Aluminum		NR		
2. Antimony		NR		
3. Arsenic		NR		
4. Barium		NR		
5. Beryllium		NR		
6. Cadmium		.007	.0034	NC
7. Calcium		NR		
8. Chromium		.053	.052	1.90
9. Cobalt		NR		
10. Copper		.104	.037	*
11. Iron		24.95	17.30	34
12. Lead		.0014	.0014	NC
13. Magnesium		NR		
14. Manganese		NR		
15. Mercury		NR		
16. Nickel		154	154	NC
17. Potassium		NR		
18. Selenium		NR		
19. Silver		NR		
20. Sodium		NR		
21. Thallium		NR		
22. Tin		NR		
23. Vanadium		NR		
24. Zinc		.150	.069	*
Other _____				
Cyanide				

* Out of Control

¹ To be added at a later date.² RPD = $\frac{|S - D|}{(S + D)/2} \times 100$

NC - Non calculable RPD due to value(s) less than CROL

000028

Inorganic Form VI

Q.C. Report No. 00112-87

DUPLICATES

LAB NAME NYTEST ENVIRONMENTAL

CASE NO.

SFC Sample No. MW15-M

DATE _____

Lab Sample ID No. MW15-M 4-20

Units

28/LMatrix Water

Compound	Control Limit ¹	Sample (S)	Duplicate (D)	RPD ²
Metals:				
1. Aluminum		NR		
2. Antimony		NR		
3. Arsenic		NR		
4. Barium		NR		
5. Beryllium		NR		
6. Cadmium		3U	3U	NC
7. Calcium		NR		
8. Chromium		10	11	9.52
9. Cobalt		NR		
10. Copper		19	18	5.40
11. Iron		23	27	
12. Lead		1U	1U	NC
13. Magnesium		NR		
14. Manganese		NR		
15. Mercury		NR		
16. Nickel		15U	15U	NC
17. Potassium		NR		
18. Selenium		NR		
19. Silver		NR		
20. Sodium		NR		
21. Thallium		NR		
22. Tin		NR		
23. Vanadium		NR		
24. Zinc		197	196	0.50
Other				
Cyanide				

* Out of Control

¹ To be added at a later date.² $RPD = [|S - D| / ((S + D) / 2) \times 100$

NC - Non calculable RPD due to value(s) less than CROL

000029

Inorganic Form VII

Q.C. Report No. 00112-87INSTRUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLELAB NAME NYTEST ENVIRONMENTAL

CASE NO. _____

DATE _____

LCS UNITS

ug/L

mg/kg

(Circle One)

Compound	Required Detection		Instrument Detection		Lab Control Sample		
	Limits (CPDL)-ug/L		Limits (IDL)-ug/L ICP/AA	Furnace	True	Found	%R
1. Aluminum	200		NR				
2. Antimony	60		NR				
3. Arsenic	10		NR				
4. Barium	200		NR				
5. Beryllium	5		NR				
6. Cadmium	5		3		3	34	NC
7. Calcium	5000		NR				
8. Chromium	10		9	9	9	9	100
9. Cobalt	50		NR				
10. Copper	25		20		20	20	100
11. Iron	100		100		100	101	101
12. Lead	5		1		1	14	NC
13. Magnesium	5000		NR				
14. Manganese	15		NR				
15. Mercury	0.2		NR				
16. Nickel	40		15		50	50	100
17. Potassium	5000		NR				
18. Selenium	5		NR				
19. Silver	10		NR				
20. Sodium	5000		NR				
21. Thallium	10		NR				
22. Tin	40		NR				
23. Vanadium	50		NR				
24. Zinc	20		20		20	23	115
Other:							
Cyanide	10						

000030

Inorganic Form VII

Q.C. Report No. 00112-87INSTRUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLELAB NAME NYTEST ENVIRONMENTAL

CASE NO. _____

DATE _____

LCS UNITS

ug/L

mg/kg

(Circle One)

Compound	Required Detection	Instrument Detection		Lab Control Sample		
	Limits (CPDL)-ug/L	Limits (IDL)-ug/L ICP/AA	Furnace	True	Found	NR
1. Aluminum	200	NR				
2. Antimony	60	NR				
3. Arsenic	10	NR				
4. Barium	200	NR				
5. Beryllium	5	NR				
6. Cadmium	5	5		5	5	100
7. Calcium	5000	NR				
8. Chromium	10	10		10	14	R
9. Cobalt	50	NR				
10. Copper	25	25		25	26	104
11. Iron	100	100		100	97	97
12. Lead	5	1		1	14	NC
13. Magnesium	5000	NR				
14. Manganese	15	NR				
15. Mercury	0.2	NR				
16. Nickel	40	40		40	41	102.
17. Potassium	5000	NR				
18. Selenium	5	NR				
19. Silver	10	NR				
20. Sodium	5000	NR				
21. Thallium	10	NR				
22. Tin	40	NR				
23. Vanadium	50	NR				
24. Zinc	20	20		20	18	90
Other:						
Cyanide	10					

000031

Inorganic Form IX (Quarterly)

INSTRUMENT DETECTION LIMITS

LAB NAME NYTEST ENVIRONMENTAL ICP/Flame AA (Circle One) Model No. _____

DATE _____

Furnace AA No. _____

Element	Wavelength (nm)	CDL (µg/L)	IDL (µg/L)	Element	Wavelength (nm)	CDL (µg/L)	IDL (µg/L)
1. Aluminum	NR	200		13. Magnesium	NR	5000	
2. Antimony	NR	60		14. Manganese	NR	15	
3. Arsenic	NR	10		15. Mercury	NR	0.2	
4. Barium	NR	200		16. Nickel	2320	40	15
5. Beryllium	NR	5		17. Potassium	NR	5000	
6. Cadmium	223.8	5	3	18. Selenium	NR	5	
7. Calcium	NR	5000		19. Silver	NR	10	
8. Chromium	357.9	10	9	20. Sodium	NR	5000	
9. Cobalt	NR	50		21. Thallium	NR	10	
10. Copper	324.7	25	10	22. Tin	NR	40	
11. Iron	248.3	100	10	23. Vanadium	NR	50	
12. Lead	217.0	5	1	24. Zinc	2139	20	2

Footnotes:

- Indicate the instrument for which the IDL applies with a P (for ICP/Flame AA) or a F (for Furnace AA) behind the IDL value.
- Indicate elements commonly run with background correction (AA) with a B behind the analytical wavelength.
- If more than one ICP/Flame or Furnace AA is used, submit separate Forms IX-XI for each instrument.

Comments: _____

Lab Manager _____

000092

Cr

mg/L

5/5/87

Cd

mg/L

5/5/87

Ni

mg/L

5/5/87

0.001

0.000

0.001

0.001 AV

0.000 AZ

0.072

0.073

0.072

0.072 AV

1.000 S1

2.282 C

2.294 C

2.336 C

2.304 AV

2.500 S2

4.996 C

4.791 C

4.847 C

4.878 AV

5.000 S3

-0.011

-0.004

0.002

-0.004 AV

0.006

0.009

0.011

0.009 AV

0.277

0.273

0.272

0.274 AV

0.068

0.065

0.079

0.071 AV

0.021

0.023

0.028

0.024 AV

0.032

0.023

0.026

0.029 AV

0.046

0.046

0.037

0.043 AV

0.142

0.138

0.141

0.140 AV

0.038

0.038

0.034

0.037 AV

0.266

0.259

0.260

-0.001

-0.000

-0.000

-0.000 AV

0.000 AZ

0.035

0.035

0.035

0.035 AV

0.035

0.036

0.035

0.035 AV

0.250 S1

0.498 C

0.494 C

0.495 C

0.496 AV

0.500 S2

0.997 C

0.984 C

0.992 C

0.991 AV

1.000 S3

0.004

0.003

0.001

0.002 AV

0.002

0.002

-0.000

0.001 AV

0.037

0.036

0.035

0.036 AV

0.010

0.011

0.009

0.010 AV

-0.009

-0.008

-0.009

-0.003 AV

-0.001

-0.004

-0.002

-0.002 AV

0.000

0.000

0.003

0.001 AV

0.014

0.018

0.017

0.016 AV

-0.006

-0.003

-0.006

-0.000

0.001

0.001

0.001 AV

0.000 AZ

0.051

0.051

0.050

0.051 AV

1.000 S1

2.506 C

2.529 C

2.486 C

2.507 AV

2.500 S2

4.612 C

4.627 C

4.646 C

4.629 AV

12 ER

4.701 C

4.741 C

4.757 C

4.733 AV

5.000 S3

0.002

-0.002

0.002

0.001 AV

0.051

0.050

0.049

0.050 AV

0.213

0.213

0.207

0.211 AV

0.037

0.032

0.025

0.031 AV

-0.003

0.010

0.002

0.003 AV

0.007

0.009

0.004

0.007 AV

0.003

0.004

-0.009

-0.001 AV

0.036

0.046

0.045

0.042 AV

-0.003

Blank

1

CRDL

2

EPA

UP284Gr#2

3

Spectrum

MW1SS1

4

MW1SS1

5

MW2SS11

6

MW2SS5

7

MW3SS1

8

MW3SS11

9

MW3SS5

Blank

1

CRDL

2

EPA

UP284Gr#2

3

Spectrum

MW1SS1

4

MW1SS11

5

MW2SS11

6

MW2SS5

7

MW3SS13

8

MW3SS11

Blank

1

CRDL

2

EPA

UP284Gr#2

3

Spectrum

MW1SS1

4

MW1SS11

5

MW2SS11

6

MW3SS5

7

MW3SS11

000033

8

MW3SS11

	0.037	
7	0.043	AV
MW3551	0.142	
	0.138	
	0.141	
8	0.140	AV
MW35511	0.038	
	0.038	
	0.034	
9	0.037	AV
MW3555	0.266	
	0.259	
	0.260	
10	0.261	AV
MW4555	0.036	
	0.032	
	0.027	
11	0.032	AV
MW45511	0.051	
	0.056	
	0.052	
12	0.053	AV
MW1555	0.035	
	0.033	
	0.035	
13	0.034	AV
MW45511	0.051	
	0.055	
DUP	0.049	
14	0.052	AV
MW45511	0.266	
	0.269	
SPKKE	0.268	
15	0.268	AV
	0.006	
Black	-0.005	
	-0.007	
16	-0.002	AV
	0.285	
X	0.223	
	0.096	
17	0.202	AV
EPA	0.286	
WP28462	0.283	
	0.276	
17	0.282	AV

MW2555	0.000	
	0.003	
7	0.001	AV
MW35513	0.014	
	0.018	
	0.017	
8	0.016	AV
MW35511	-0.006	
	-0.003	
	-0.006	
9	-0.005	AV
MW3555	0.007	
	0.008	
	0.008	
10	0.008	AV
MW4555	0.013	
	0.012	
	0.010	
11	0.012	AV
MW45511	0.008	
	0.007	
	0.005	
12	0.007	AV
MW1555	-0.006	
	-0.004	
	-0.003	
13	-0.004	AV
MW45511	-0.002	
DUP	-0.003	
	-0.003	
14	-0.003	AV
MW45511	0.058	
	0.058	
SPKKE	0.058	
15	0.058	AV
	0.005	
Black	0.006	
	0.005	
16	0.005	AV
	0.054	
X	0.050	
	0.049	
17	0.051	AV
EPA	0.036	
WP28462	0.037	
	0.039	
17	0.037	AV

	0.007	
MW3555	0.003	
	0.004	
	-0.009	
7	-0.001	
MW3551	0.036	
	0.046	
	0.045	
8	0.042	A
MW35511	-0.003	
	0.012	
	0.008	
9	0.006	A
MW3555	0.005	
	0.012	
	0.015	
10	0.010	A
MW4555	0.029	
	0.038	
	0.041	
11	0.036	A
MW45511	0.014	
	0.008	
	-0.002	
12	0.007	AV
MW1555	0.006	
	-0.005	
	-0.013	
13	-0.004	AV
MW45511	-0.001	
DUP	0.006	
	0.008	
14	0.004	AV
MW45511	0.469	
SPKKE	0.472	
	0.475	
15	0.472	AV
	-0.006	
Black	-0.010	
	-0.017	
16	-0.011	AV
EPA	0.187	
WP28462	0.188	
	0.206	
17	0.194	AV

000034

Zn

	mg/L	
	0.000	
	0.000	
	0.000	
	0.000	AV
	0.000	AZ
	0.088	
	0.088	
	0.088	
	0.088	AV
	0.250	S1
	0.474	C
	0.475	C
	0.476	C
	0.475	AV
	0.500	S2
	1.041	C
	1.040	C
	1.037	C
	1.039	AV
	1.000	S3
Blank	-0.000	
	0.000	
1	0.001	
CRDL	0.000	AV
	0.024	
	0.023	
	0.023	
2	0.023	AV
EPA	0.387	
WP254Gr#2	0.387	
	0.388	
3	0.387	AV
Spectrum	0.284	
	0.284	
MW1SS1	0.283	
4	0.284	AV
	0.041	
MW1SS11	0.042	
	0.042	
5	0.042	AV
	0.052	
MW2SS11	0.045	
	0.052	
6	0.050	AV
	0.051	
MW2SS5	0.052	
	0.051	
7	0.051	AV
	0.259	
MW3SS1	0.260	
	0.263	
8	0.260	AV
	0.055	
MW3SS11	0.054	
	0.057	
9	0.050	AV
	0.065	
MW3SS5	0.065	
	0.063	
10	0.064	AV

Cu

	mg/L	
	-0.001	
	-0.000	
	-0.001	
	-0.001	AV
	0.000	AZ
	0.074	
	0.074	
	0.075	
	0.074	AV
	1.000	S1
	2.422	C
	2.434	C
	2.430	C
	2.429	AV
	2.500	S2
	5.155	C
	5.146	C
	5.164	C
	5.155	AV
	5.000	S3
Blank	-0.005	
	-0.011	
1	-0.004	
CRDL	-0.007	AV
	0.020	
	0.019	
	0.019	
2	0.020	AV
EPA	0.330	
WP254Gr#2	0.331	
	0.331	
3	0.331	AV
Spectrum	0.047	
	0.041	
MW1SS1	0.047	
4	0.045	AV
	0.001	
MW1SS11	-0.001	
	-0.001	
5	-0.000	AV
	0.010	
MW2SS11	0.014	
	0.014	
6	0.013	AV
	0.275	
MW2SS5	0.276	
	0.260	
7	0.277	AV
	0.087	
MW3SS1	0.084	
	0.080	
8	0.034	AV
	0.002	
MW3SS11	0.005	
	0.006	
9	0.005	AV

Fe

	mg/L	
	-0.002	
	-0.002	
	-0.002	
	-0.002	
	0.000	
	0.050	
	0.051	
	0.051	
	0.051	
	1.000	
	2.472	
	2.455	
	2.476	
	2.468	
	2.500	
	4.746	
	4.794	
	4.784	
	4.775	
	5.000	
	0.008	
Blank	0.013	
1	0.016	
CRDL	0.012	
	0.104	
	0.092	
	0.106	
2	0.101	
EPA	0.883	
WP254Gr#2	0.899	
	0.729	
3	0.237	
Spectrum	05	
MW1SS1	05	
4	05	
MW1SS1	5.206	
	5.176	
1:10	5.139	
4	5.174	
MW1SS11	05	
	05	
5	05	
MW1SS11	1.332	
	1.355	
1:10	1.342	
5	1.343	
MW2SS11	05	
	05	
6	05	
MW2SS11	1.537	
	1.502	
1:10	1.524	
6	1.521	
MW2SS5	05	
	05	
7	05	
MW2SS5	1.052	

8	0.260	AV
MW3SS11	0.055	
	0.054	
	0.057	
9	0.056	AV
MW3SS5	0.065	
	0.065	
	0.063	
10	0.064	AV
	0.059	
MW4SS5	0.060	
	0.059	
11	0.059	AV
	0.150	
MW4SS11	0.150	
	0.151	
12	0.150	AV
	0.069	
MW1SS5	0.068	
	0.069	
13	0.069	AV
	0.048	
MW4SS11	0.048	
DUP	0.048	
14	0.043	AV
	0.653	
MW4SS11	0.652	
SPIKE	0.650	
15	0.653	AV
	0.001	
Blank	-0.001	
	0.001	
16	0.000	AV
	0.389	
EPA	0.391	
WP284 loc #2	0.390	
17	0.390	AV

MTS	0.365	
87-13414	0.365	
Comp	0.362	
18	0.364	AV
	0.461	
MTS	0.469	
87-13415	0.469	
Comp	0.466	
19	0.428	AV
	0.431	
DUP	0.427	
20	0.429	AV
	1.012	
SPIKE	1.011	
	1.005	
21	1.009	AV
	-0.002	
Blank	-0.001	
	-0.001	
22	-0.001	AV
	0.386	
EPA		

7	0.277	AV
	0.087	
MW3SS1	0.084	
	0.080	
8	0.084	AV
	0.002	
MW3SS11	0.006	
	0.006	
9	0.005	AV
	0.026	
MW3SS5	0.026	
	0.020	
10	0.024	AV
	0.075	
MW4SS5	0.071	
	0.074	
11	0.073	AV
	0.104	
MW4SS11	0.105	
	0.104	
12	0.104	AV
	0.010	
MW1SS5	0.011	
	0.015	
13	0.012	AV
	0.038	
MW4SS-11	0.035	
DUP	0.037	
14	0.037	AV
	0.349	
MW4SS-11	0.350	
	0.350	
15	0.350	AV
	-0.016	
Blank	-0.017	
	-0.019	
16	-0.017	AV
	0.334	
EPA	0.331	
WP284 loc #2	0.334	
17	0.333	AV

MTS	0.144	
87-13414	0.145	
Comp	0.145	
18	0.145	AV
	0.114	
MTS	0.115	
87-13415	0.114	
Comp	0.114	
19	0.114	AV
	0.112	
DUP	0.113	
20	0.111	AV
	0.112	
SPIKE	0.301	
	0.371	
21	0.379	AV
	0.370	

MW2SS5	0.05	
	0.05	
7	0.05	
MW2SS5	1.052	
1:10	1.077	
	1.065	
7	1.064	
MW3SS1	0.05	
	0.05	
8	0.05	
MW3SS1	5.098	
1:10	5.073	
9	5.085	
	5.085	
MW3SS11	0.05	
	0.05	
10	0.05	
MW3SS11	1.357	
1:10	1.363	
	1.367	
10	1.362	
MW3SS5	0.05	
	0.05	
11	0.05	
MW3SS5	1.743	
1:10	1.731	
	1.734	
11	1.736	
MW4SS5	0.05	
	0.05	
12	0.05	
MW4SS5	1.266	
1:10	1.265	
	1.247	
12	1.259	
MW4SS-11	0.05	
	0.05	
13	0.05	
MW4SS-11	2.493	
1:10	2.503	
	2.499	
13	2.495	
MW1SS5	0.05	
	0.05	
14	0.05	
MW1SS5	2.030	
1:10	2.018	
	2.052	
14	2.034	
MW4SS11	0.05	
DUP	0.05	
15	0.05	
MW4SS11	1.751	
DUP	1.722	
1:10	1.716	
15	1.730	

EPA
WP284 Core #2
17

0.389
0.391
0.390
0.390 AV

MTS
87-13414
Comp
18

0.365
0.365
0.362
0.364 AV

MTS
87-13415
Comp
19

0.461
0.469
0.469
0.466 AV

PVP
20

0.431
0.427
0.429 AV

MW SPIKE
21

1.012
1.011
1.005
1.009 AV

MW Blank
22

-0.002
-0.001
-0.001
-0.001 AV

MW2 EPA
WP284 Core #2
23

0.386
0.390
0.391
0.389 AV

MW4SS-11
SPIKE
15
Blank
16

0.349
0.350
0.350
0.350 AV
-0.016
-0.017
-0.019
-0.017 AV

EPA
WP284 Core #2
17

0.334
0.331
0.334
0.333 AV

MTS
87-13414
Comp
18

0.144
0.146
0.145
0.145 AV

MTS
87-13415
Comp
19

0.114
0.115
0.114
0.114 AV

PVP
20

0.112
0.113
0.111
0.112 AV

SPIKE
21

0.361
0.371
0.379
0.370 AV

Blank
22

-0.010
-0.007
-0.003
-0.007 AV

EPA
WP284 Core #2
23

0.331
0.336
0.323
0.332 AV

120 2.499
13 2.495
MW1SS5
14 05
05
05

MW1SS5
1:10 2.030
2.018
2.052
14 2.034

MW4SS11
PVP
15 05
05
05

MW4SS11
PVP
15 1.751
1.722
1.716
1.730

MW4SS11
SPIKE
16 05
05
05

MW4SS11
SPIKE
1:10 2.605
2.638
2.619
16 2.621

Blank
17 0.005
0.005
0.008

X
18 0.916
0.896
0.877

X
18 0.896
0.914
0.891
0.900

EPA
WP284 Core #2
18 0.901
0.865
0.870
0.863
0.866

Julia

Pb

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	-0.012	
	0.005	
	0.006	
	-0.001	AV
BLANK	0.000	AZ
	0.014	
	0.015	
	0.015	
	0.015	AV
	0.250	S1
	0.467	C
	0.505	C
	0.475	C
	0.482	AV
	0.500	S2
	0.987	C
	1.030	C
	1.030	C
	1.016	AV
	1.000	S3
	-0.006	
	0.002	
	-0.003	
BLANK	-0.002	AV
	0.476	
	0.459	
	0.458	
EPA 284 Con 2	0.464	AV
	0.217	
	0.226	
MW-SS1	0.201	
	0.215	AV
	-0.008	
	0.002	
	0.000	
MW-SS-11	-0.002	AV
	-0.008	
	0.001	
	0.007	
MW-2-SS-11	-0.000	AV
	0.117	
	0.104	
MW-2-SS-5	0.119	
	0.113	AV
	0.087	
	0.093	
MW-3-SS-1	0.095	
	0.092	AV
	0.007	
	0.006	
	0.001	
MW-3-SS-11	0.005	AV
	0.008	
	0.011	
	0.014	
MW-3-SS-5	0.011	AV
	0.016	
	0.003	
	0.002	

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MW-3-SS-1	0.000	
	0.002	AV
	0.007	
	0.006	
	0.001	
MW-3-SS-11	0.005	AV
	0.008	
	0.011	
	0.014	
MW-3-SS-5	0.011	AV
	0.016	
	0.003	
	0.002	
MW-4-SS-5	0.007	AV
	0.017	
	0.032	
	0.016	
MW-4-SS-11	0.022	AV
	0.006	
	0.010	
	0.000	
MW-1-SS-5	0.005	AV
	0.002	
	0.004	
	0.002	
MW-4-SS-11	0.003	AV
Dup.	0.507	
	0.515	
	0.511	
Spike.	0.511	AV
MW-4-SS-11	0.015	
	0.016	
	0.007	
BLANK	0.013	AV
	0.430	
	0.423	
	0.425	
EPA 254 Conc 2	0.426	AV

000079